PS

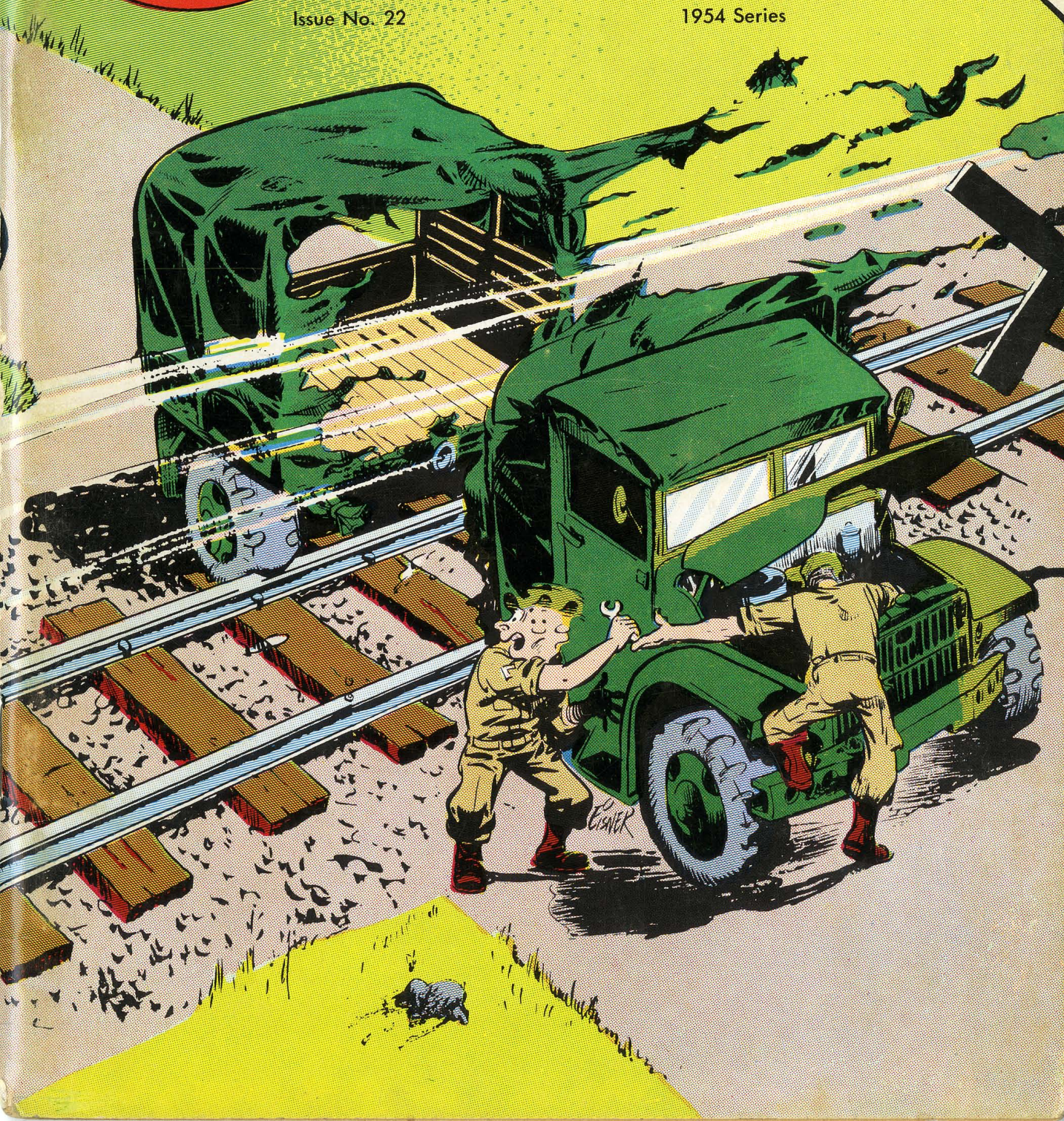
THE PREVENTIVE MAINTENANCE MONTHLY

FOR THE DRIVER, GUNNER, MECHANIC

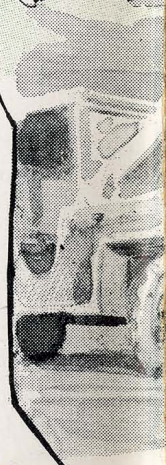
Issue No. 22 1954 Series

M33 FIRE CONTROL

See Pages 2-13



P*M ... "BY-THE



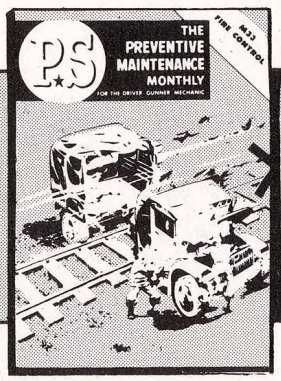
Dear Half-Mast,

I've been knocking around motor pools long enough to know how important preventive maintenance is to the life of a vehicle (and sometimes to the lives of the guys using it). Seems to me the weakest link in most PM programs is the before operation and after operation services. I've done my share of goofing off and know how easy it is to skim over or even skip these check's when you can get away with it.

Thought you might like to know about the "brick-proof" system my present outfit uses for getting this job done. Every morning and afternoon the motor officer and sergeants line everybody up and we go through the "before and after" checks ~~by the numbers~~

Naturally y'hear a lot of squawks of "chicken" at first, but everybody soon gets used to the idea. Sure keeps the stuff operating in top shape.

Cpl. H. R. N.



THE COVER---Stop, look and listen is what Joe should have done before he left the motor pool. A railroad crossing's no place to start pondering the if's, and's and but's of Preventive Maintenance.

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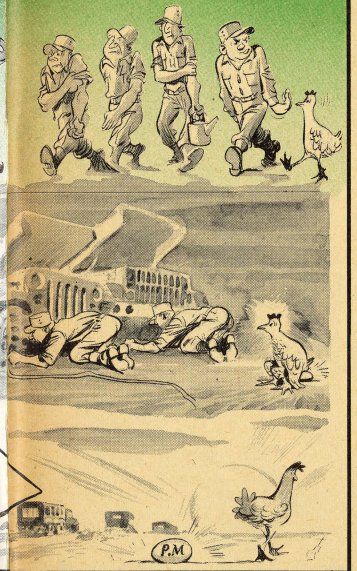

Dear Cpl H.R.M.,

That's one sure way of handling a mighty important job, all right. We hear a lotta outfits are using it these days.

P.S. It might be chicken to some, but it sure lays a golden egg.

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PS Magazine wants your ideas and contributions, and is glad to answer your questions. Just write: **Editor, PS Magazine, Aberdeen Proving Ground, Maryland.**

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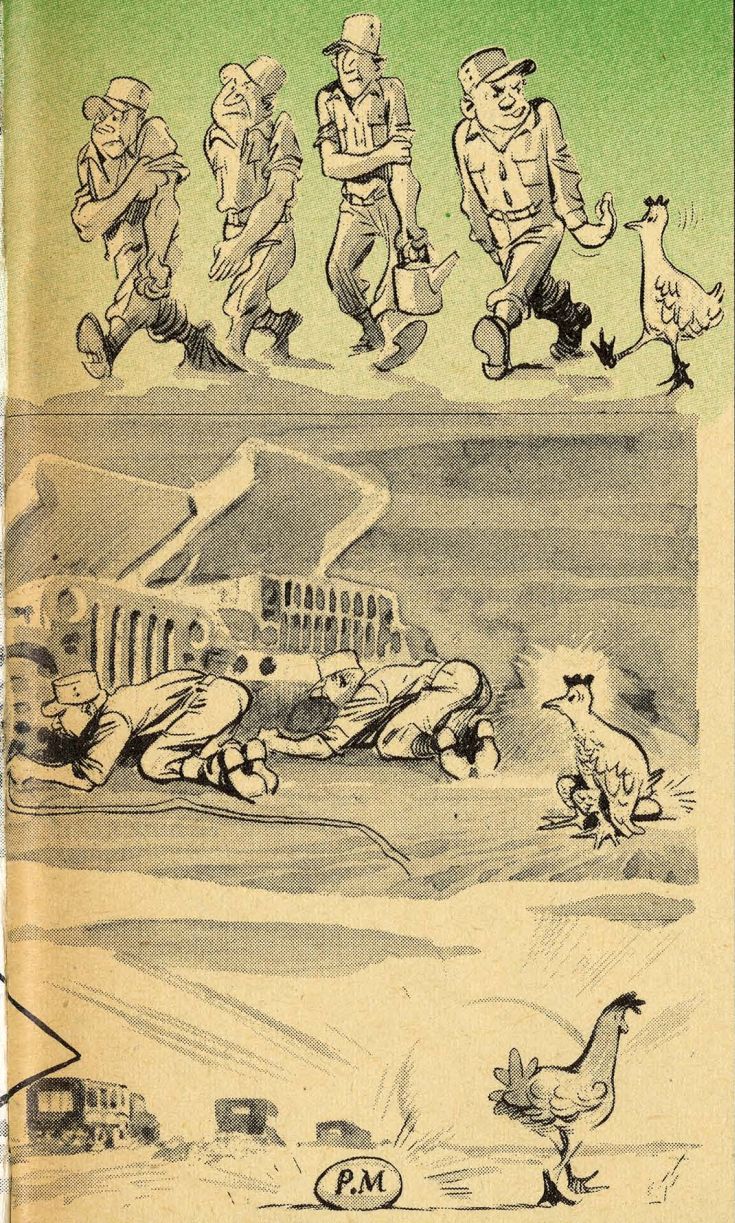
-NUMBERS"



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With that M33 FIRE CONTROL SYSTEM

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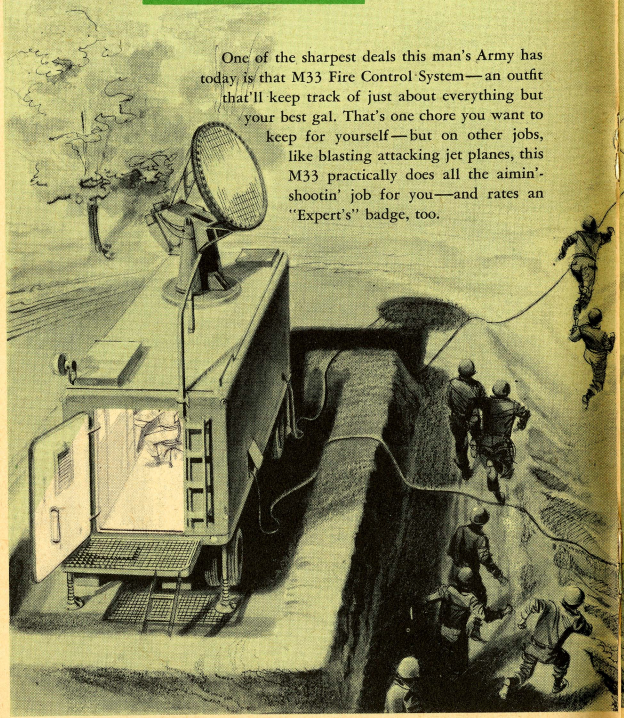
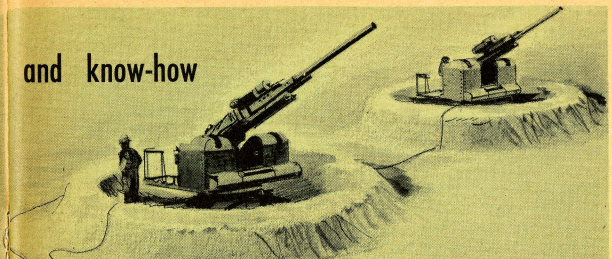


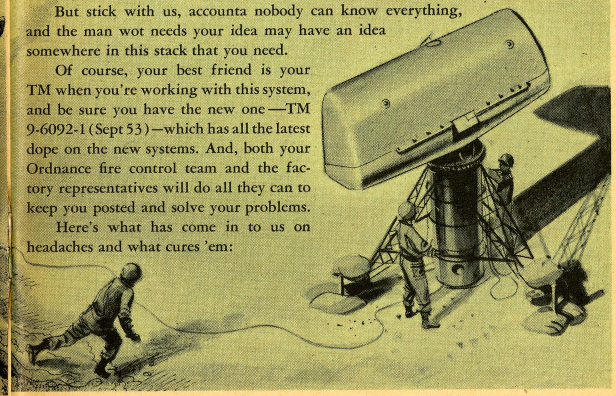


PS has been getting lots of letters from you on the M33, and our guys have been out talkin' witcha'. Also with the birds who make the system, the men who work on it—in fact, anybody that might have some good dope for them that are using it. So, we've got a pot-full of little notes and ideas that might be helpful. Some of these you may know already—in fact, some of you will recognize ideas you sent in or told to one of our boys.

But stick with us, accounta nobody can know everything, and the man wot needs your idea may have an idea somewhere in this stack that you need.

Of course, your best friend is your TM when you're working with this system, and be sure you have the new one—TM 9-6092-1 (Sept 53)—which has all the latest dope on the new systems. And, both your Ordnance fire control team and the factory representatives will do all they can to keep you posted and solve your problems.

Here's what has come in to us on headaches and what cures 'em:



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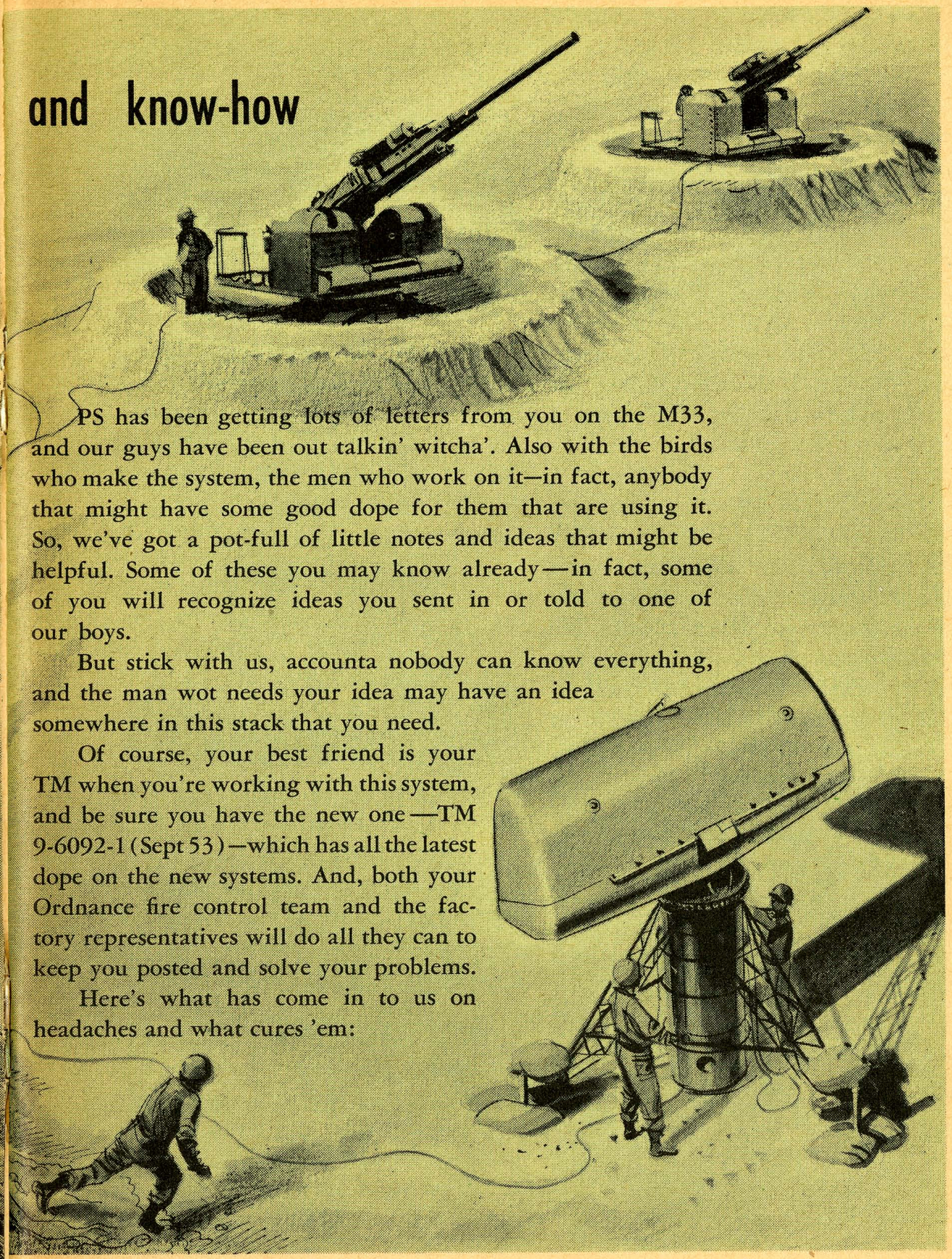

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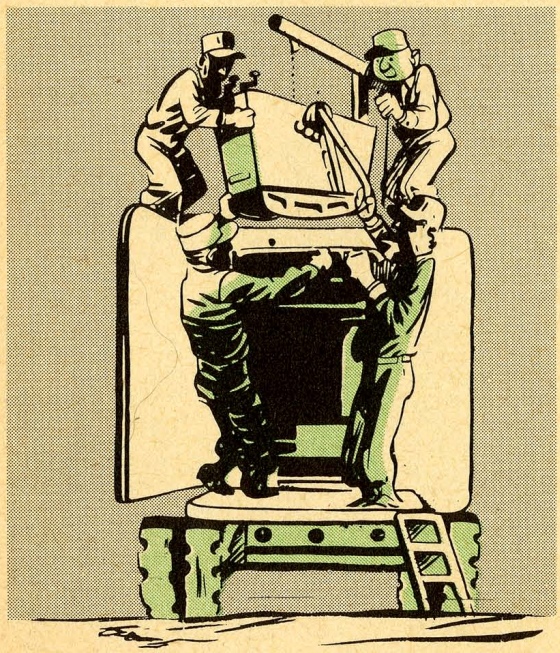
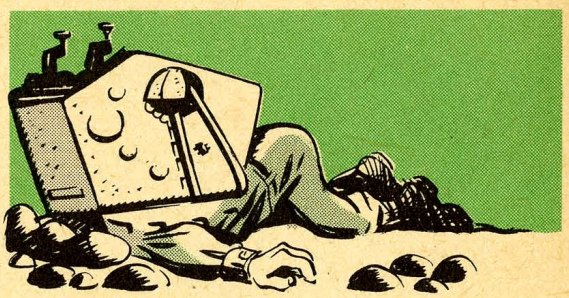
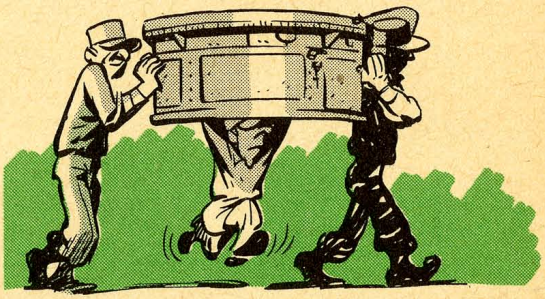
SAFETY STRAPS—One smart outfit at Ft Bliss, Texas, is using a couple of the personnel safety straps from their 2½-ton trucks to make sure they won't drop the acquisition-antenna radome, even if the handles should pull out when it's on the derrick. After attaching the lifting harness to the antenna, they hook the safety-strap snaps around the harness ropes—just above the hooks. Then if the handles should carry away, the dome only drops a couple of inches and comes to rest in the safety straps. Or you could tie three or four passes of rope across on each side.

HAND LINES—This same outfit prefers to use long hand lines to steady the loads and have their men on the ground instead of on the rear platform of the system van when hoisting the track-antenna elevation-drive. They figure this is safer than the method shown in Fig 102, page 138, TM 9-6092-1, on accounta that elevation drive weighs almost a quarter-ton, and it'd tickle a bit if it should kiss you on your bald spot.





NEEDED: TALL MEN—Quite a few wave guides have been fouled up when the acq antenna drive is put on top of the RF coupling. The boys didn't lift the drive high enough before moving it over the coupling housing. Best you get all the tall men you can find room for



around that lifting cradle, and hold the drive well above the coupler while you move it over.

Strong old rumor sez that some systems **have** been set up with the help of the battalion M62 wrecker. You on good terms with your motor pool?

HEFTY LEFT—When driving into the battery site, always remember that the left, or road side, of the system van is the heavy side, and try to keep it uphill on any sloping roads. In fact, the driver wants to keep that in mind all the time. It pays to slow way down, or even stop, before making right turns.

RUBBER SAVER—When you do get on site and set up, remember that air and sunlight are the worst enemies of rubber tires. They'll deteriorate faster when you're parked than when in use. So—if the Old Man will allow it, coat 'em good with Compound, strippable, adhering, Ord Stock No. 52-C-2250-55, or Compound, protective, strippable (sprayable), Ord Stock No. 52-C-3256-455 (Ord 3, SNL K-1) whenever you're to be in a place 90 days or longer.

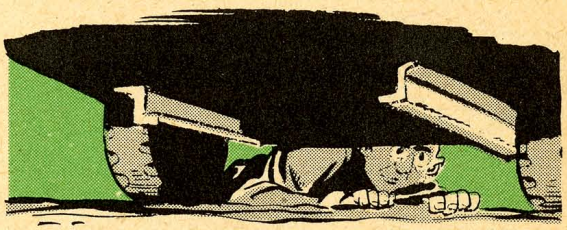
These compounds will protect the tires; they can be removed easily, and what's more, if you have to move in a hurry, you can run the coated tires and do no harm. (The compound will break off under way.)

Permanent-sited batteries will do well to construct some kind of a shed to keep the sun and snow off the gun bogies, too.

Since the compounds we mention come 50-gallons to the container, it's best be set up as a battalion or group project. See your Ordnance officer for the special requisition to get 'em.

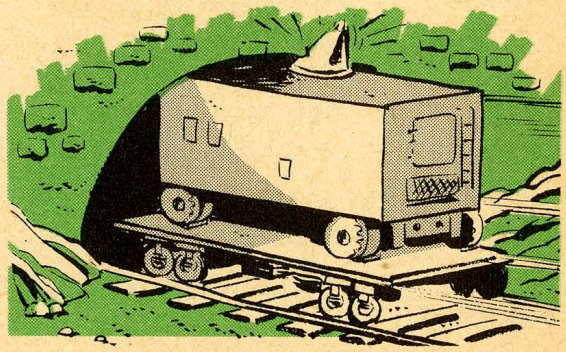
ROTATE—Various units have adopted all kinds of little codes and marks to be sure the wheels are being rotated on the parked vans. Some use numbers, some use plus and minus marks, some use colored dots. Doesn't matter what you use as long as it's uniform in the organization, and everyone knows what the marks mean—one mark on top on odd days, the other up on even days.

SAVE BENT EDGES—After you assemble the track antenna, take the platform on which it travels out of the van and stow it in the L-shaped brackets under the radar trailer. These brackets are provided to prevent loss or damage to the platform.



Some of the earlier acq antenna waveguides, just after System 132, had fixed flanges on both sides of the joint. If you can't get these flanges to mate properly, tape the joint with Vinyl Tape, Ord Stock No. H005-0875935, 945, or No. 955 (1/2 inch, 3/4 inch or 1 inch) to keep the dust out. If the guides have been bent, or are seriously out of line, they should be replaced.

DELICATE OPTICS—Of course, if you arrived at your site by road march, you didn't take the upper optics of your tracking periscope off when you prepared for march order. But if your equipment went by rail, low clearances made it necessary to remove these optics. In replacing them, use a non-hardening compound such as plastic-type gasket cement, Ord Stock No. 52-C-685, and be careful to get a good seal. There



have been some cases of water in the optics after they were removed and replaced.

When you have installed your track antenna lens, check to be sure none of the vanes are bent, and reshape any that have been damaged. One or two bent vanes will do no harm, but they detract from the carefully focused RF beam, and waste signal strength.

AIR-CONDITIONING, YET—In case you didn't know before, here's good news—you're entitled to Air Conditioner (Line Item 200425, T/O&E 44-17A) for your radar van. But if it hasn't caught up to you yet, try rigging a fly about 18 inches above the van roof (you cut a hole for the track antenna pedestal). Both you and the set will work better on hot days.

And when you do get your air conditioner, see your Ordnance officer for permission to run a pipe from the engine oil-drain to the edge of the air conditioner trailer. It saves you having a messy trailer every time you have to drain the compressor engine.

SHIP'S LOG—Be sure you're familiar with the requirements of SR 750-120-10 as to filling out the Fire Control System Record Book (DA AGO Form 9-7). These logs are important to both the integrated fire control repair teams and the Ordnance depots. Maintenance and overhaul are much simpler when everybody knows what has been done before, and how long the system has been running.

FEELER-PEELER—Painting the acquisition antenna has been a problem to some units. You can't use lead-based paints, since they will reflect the signal and give false indications. So you get Enamel, synthetic, semi-gloss, air drying, olive drab, Spec Mil-E-11857, color No. 2430. You can get it from the Engineers in gallons under Stock No. 52-3476.017.100. You thin this enamel with Thinner, enamel, synthetic, TT-T-306, Stock No. 52-T-445.

To use this paint, you sand the dome lightly with fine sandpaper to remove all scale and loose paint. Feather the edges of the bare spots so they will not show under the new paint. You don't use any primer—just brush or spray on a coat. Let it harden and put on the second coat. Give this coat 18 hours to harden before handling the antenna. The same treatment, with the same paint, goes for the lens of the track antenna, too.

BY-THE-SEA, BY-THE-SEA—Outfits located near the sea have been having lots of trouble with corrosion of the magnesium surfaces of their systems, particularly, the machined surfaces at the top and bottom of the track pedestals, the top of the track azimuth-drive,

the bottom of the track-elevation-drive support and the V-blocks.

GREASE 'EM—You keep these surfaces coated with PL (Oil, Preservative and Lubricating, Stock No. 14-O-2833-122 or 14-O-2834-10 like it says in LO 9-679. But don't wait six months to recoat 'em—keep an eye on 'em for the first signs of corrosion (not less than once in three months in seacoast locations).

If you still have corrosion problems after that, you can substitute GL (Grease, Aircraft and Instruments, Stock No. 14-G-611-10) for the oil.

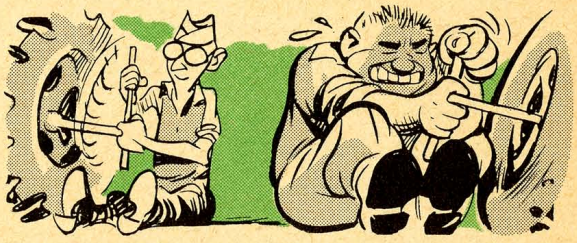
Where you find corrosion started remove it with Emery Cloth, 180-grit, (Stock No. 42-C-20399-25) or finer, if available.

And wherever you have lots of salt in the air, wash the outside of the system frequently with fresh water.

PRIMER AND PAINT—Any of your painted magnesium surfaces which are peeling must be sanded and primed with one coat of Zinc Chromate Primer (Eng Stock No. 52-6801.7004.050) and painted with one coat of Enamel, rust inhibiting, olive drab (Eng Stock No. 52-3433.700.005). Both these paints can be drawn from the Ord 7, or can be had from the Engineers.

Wherever you have exposed threads on the system, like the handbolts holding the track antenna lens, or those on the acq antenna legs, etc., you coat 'em with GAA (Grease, Automotive and Artillery).

And of course, smart men always have greased the wheel lug-bolts when changing tires.



MAGNETRONS—The new 5795 magnetrons are coming through with the red dot, which means that they are capable of producing one megawatt of power over the entire frequency range. However, you can't use 'em at full power unless your system has had **all** these Field Changes made: 160, 196, 210, 211, 243, 244, 290, 313, and 262. So check with your Ordnance team or your WECO field engineer before you crank 'em up. (Particularly, you gotta use half power unless you've had Field Changes 210 and 262. Be careful.)

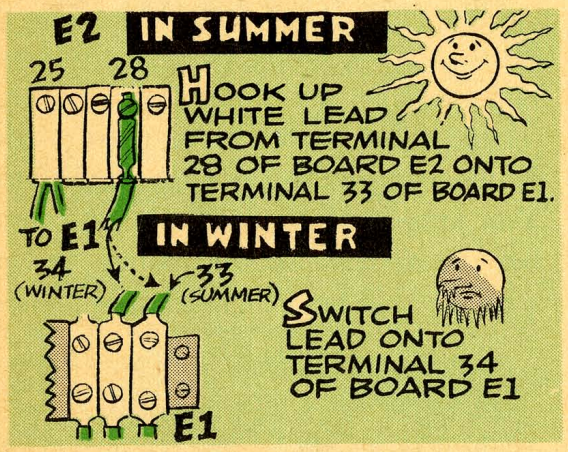
OIL—KEEP YOUR POT FULL—The oil filled potentiometers—track antenna and range computer—need to be drained and filled annually or more often, if operating in heavy dust conditions. You keep draining till the oil comes out clean. And another thing, in hot weather and before draining or adding

oil to these pots, be sure to open the air-bleed valve. One guy attempted to fill one on a real hot day, and found he had lots of pressure built up inside the pot; oil all over the van—also all over the suntans. In fact, you can bleed those air vents at least once a week, and daily in summer. It pays.

Be careful about letting dust get in through the breather vent—it may cause a "bat" or data discontinuity.

HOW'S YOUR CHARGE?—The charging rate on your 24-volt batteries wants setting according to the season and according to the condition of your batteries. Generally, leaving them on winter rate in the summer will result in overcharging, overflow of electrolyte, and a heck of a mess of corrosion in the battery compartment.

To adjust the rate on the fire control trailer, take off the heater cabinet upper panel. Loosen the three screws on the base of the meter panel and pull the panel forward. Now look at terminal board E1 on the back of the panel.

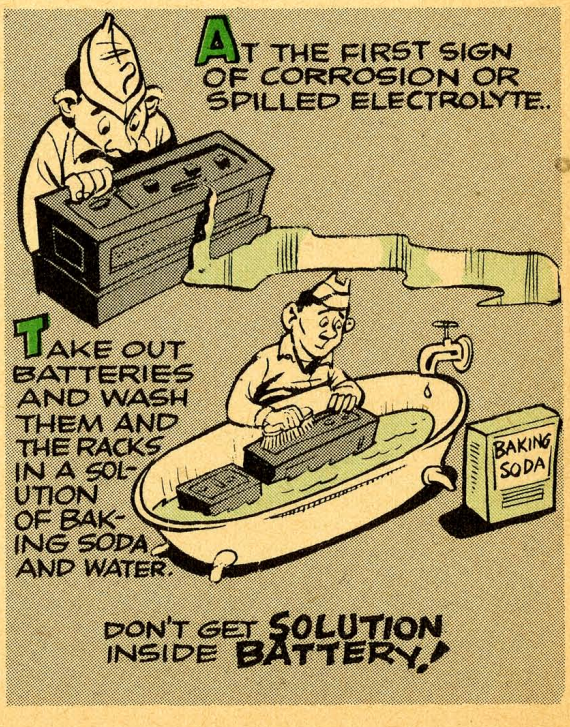


In the maintenance van, the same adjustment is made by loosening the two Dzus fasteners on the battery-charger meter-panel and hinging it forward. On the maintenance van panel, the white lead goes to terminal 18. For summer operation, and for winter, use terminal 19.

But don't make arbitrary changes for the seasons and then neglect to check the battery. Make a check with the hydrometer once a week, and keep an eye on the amount of water the battery's using. A correctly adjusted charger will maintain the battery in a fully-charged condition, and will not require over one ounce of water a week for each cell.

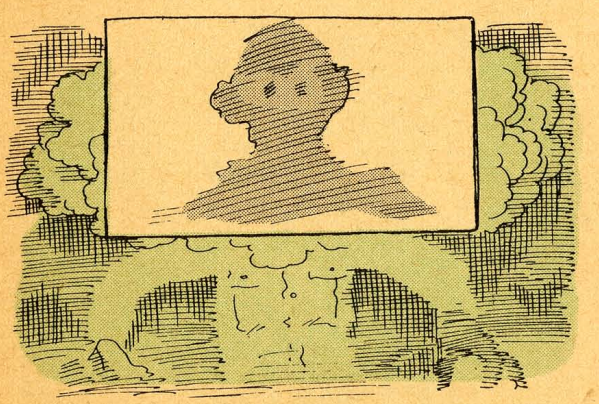
If the gravity does not stay up, increase the charge. If the water disappears too fast, reduce the charge. If it is impossible to keep the battery charged without adding water almost constantly, replace the battery and return the old one to a battery shop for a complete check.

Watch the battery racks in the system and maintenance trailers.



RAIL GUIDES—Some rail guides on the plotting boards of the early systems have been failing by bowing away from the board. (Arm, BX-94731, 7621724, BX-94733, 7621726 and BX-94734, 7621727.) You won't find these arms listed as spare parts, but your local WECO representative can get 'em for you, or you can write Frankford Arsenal Annex, Box 7989, Philadelphia 1, Pa., Attn: FSM-10.

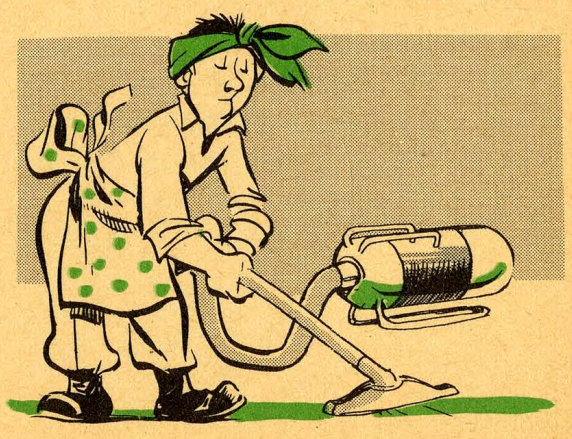
FILTERS—Dust has been causing failure of the filters, Z2, Z3, Z4, and Z5 in the tracking balance converter. Clean the edges of the polyiron rod and the plastic insulating sleeve every so often.



LIFTING HANDLES—Field Change 260 strengthens the lifting handles of your acq antenna radome. This change is in the mill for automatic distribution. But it seems that if the handles have already pulled loose, generally the rivet holes have been enlarged, and this fix will not work with enlarged rivet holes. If the holes are larger than 1/4-inch, additional repair is necessary.

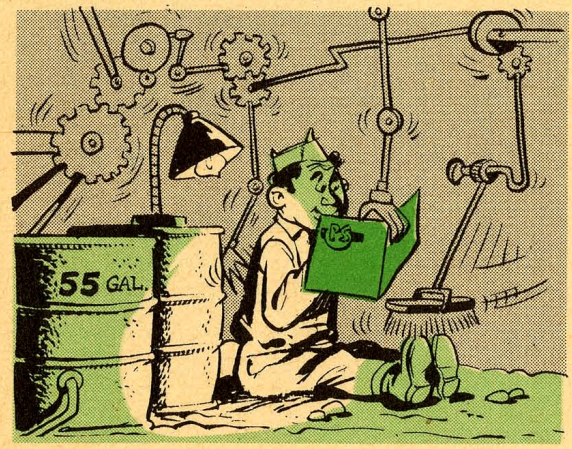
So, if your radome lifting handles **have** pulled out, contact your WECO field engineer or notify Frankford Arsenal Annex, Box 7989, Philadelphia 1, Pa., Attn: FSM-10.

SWEEP-UP—There's a suggestion being batted around that a tank-type vacuum cleaner with a 400-cycle motor be made standard equipment with the M33's. In the meantime, you'll find a standard household model will be



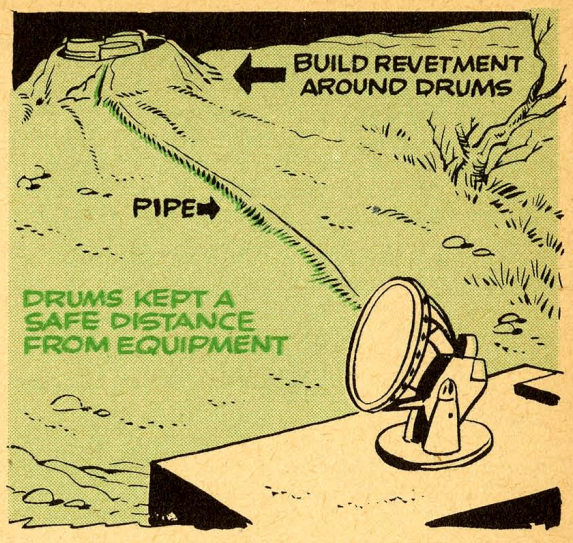
mighty handy to have. But be sure to run it from a drop cord from the camp 60-cycle current—the 400 cycle won't work.

GAS-SUPPLY—Here's an idea you'll have to get approval on from your local commanders, but if they'll let you do it, it saves lots of grief. You can rig the gasoline supply for your generators and air conditioner engine and the camp lighting generator if you have one, so that it all comes from one set of 55-gallon drums.



The drums are set up at a safe distance from the equipment and feed to the engine through a pipe running underground. If the site is sloping, you may be able to get the drums below ground. Otherwise you build a revetment around 'em.

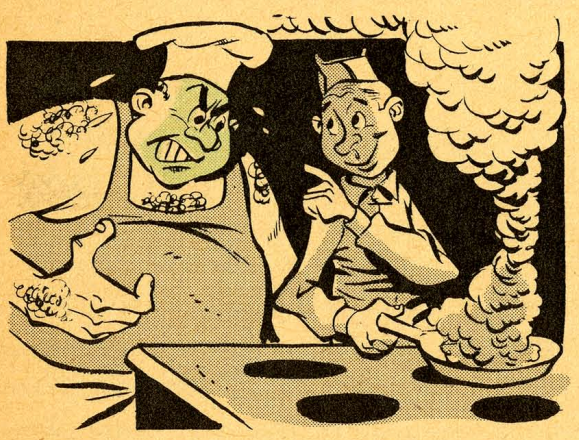
Safety is obtained by having a shut-off valve at each drum and one at each engine. Also it is wise to have a stand-by five-gallon can of gas at each engine. An old military standard fuel filter, if you can find one, can be used to protect the engines from dirt and water. Otherwise build a settling bowl of pipe fittings and drain it daily.



MARK-UP—Some smart maintenance men are using grease pencils (the kind you use to mark on acetate map overlays) to keep a running inventory of their spare parts. They mark the number of pieces they have on hand right on the acetate plastic door covers—and change it each time they use a part.

WAX-WORKS—This sounds like carrying appearances to extreme, but if you'll wax the walls, cabinets and ceilings of your vans with a hard gloss wax, just once, you'll find the wax fills the pores of the paint, and then the walls'll come clean with an easy wipe of a damp cloth ever after.

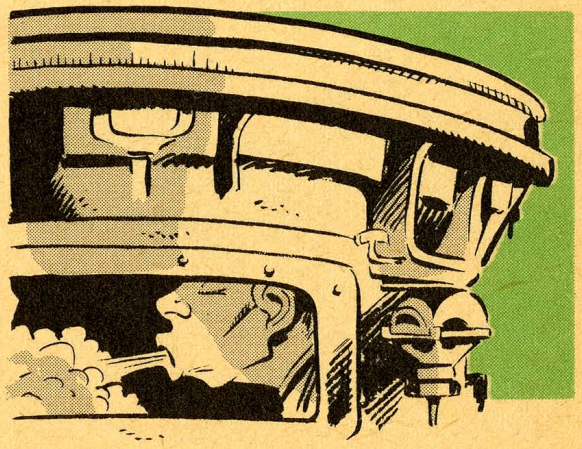
DRY 'EM—Be sure to change the silica gel in your optical systems when the color goes to pink. If you can't get a new dessicant, bake the one you've got in the mess hall oven, not over 120° F, until it goes blue again, and replace. Be careful to get a tight seal.



PARKING—When you park your vans, be sure the breakaway brake switches are left in the OFF position—particularly on the maintenance van.

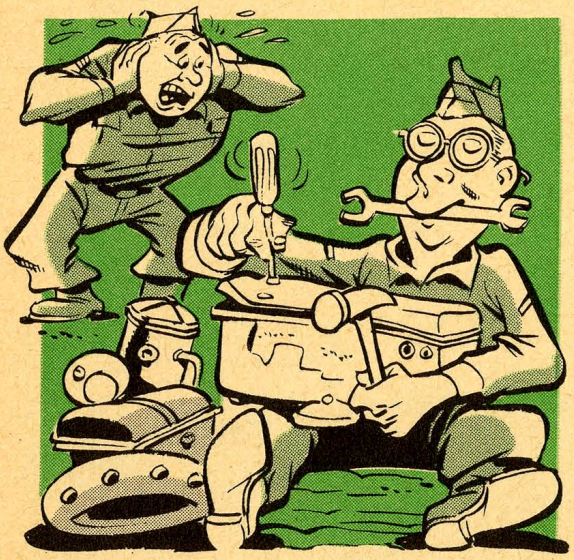
RECORD IT—Some units are using WD AGO 971 stock cards for constant inventory of the parts in the maintenance van. This works good, together with the marks on the doors mentioned before.

AIR FILTER—The air filter in the acquisition antenna drive is sometimes overlooked. You get at this filter by removing the long narrow door (761-6029) located directly under the "Orient" panel on the drive assembly. Look at Ord 9 SNL F342, Vol 2, page 226, Fig 56. You'll see that the filter lies flat between the air duct and the acq drive assembly. Service with the other filters (Filter, air, dust stop, 10 x 10 x 1, Stock No. F342-7605703).

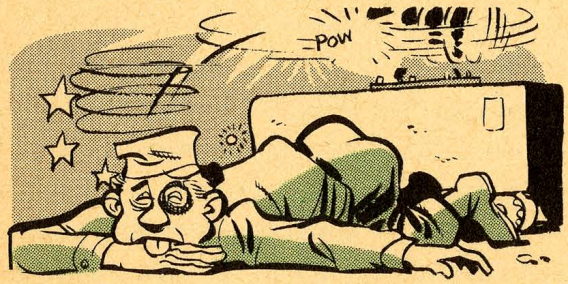


CHANNELS—M33 parts which fail after a short period of use due to defect in manufacture are to be returned to the Western Electric Company through Ordnance channels. Such parts (especially oil-filled potentiometers) are to be removed intact and carefully packaged by Ordnance field personnel. The packages are to be marked "M33 Latent Defect Materiel" and shipped to the proper distribution depot.

And be sure you don't tear into them to see why they don't work. The company is running tests to see why the most frequent failures occur, and torn-up parts are no help to them.



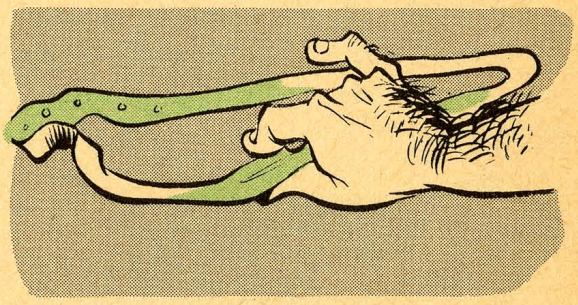
SWITCH-OFF—Remember to turn off the safety switch before getting up on the acq antenna or in close to the track antenna to work on 'em. You'll look funny if someone else turns on the drive, but you won't feel so hot.



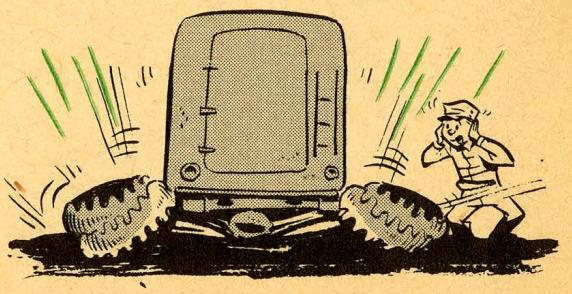
REAL BLISSFUL—Ft Bliss Ordnance has approved removing the four computer-rate knobs from the target rate indicator panel and installing a 3/16-inch plexiglass safety cover about 12x 18 inches over the meter cover glasses to prevent accidental breakage.

The same Ft Bliss men are replacing four of the secondary mounting screws on the plate load resistor panel of the DC amplifier with longer screws and fiber tube spacers to support a 5/16-inch plexiglass cover over the resistor bank. This prevents accidental destruction of the expensive precision resistors.

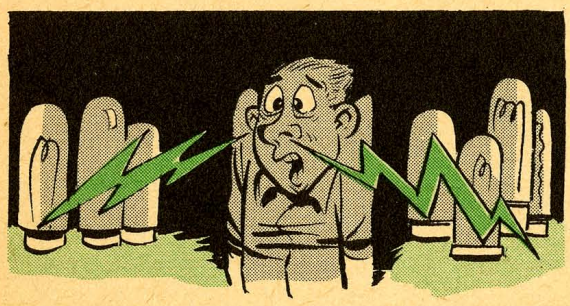
LUBE—In lubricating the system, don't neglect the track-antenna azimuth-drive ring. And if you remove the inside cover from this ring, remember that it is light, brittle, plastic-bonded paper-board. **Take it easy.** Watch for excess grease on bearings and keep it removed. It may work onto the friction drive rail and cause slippage.



LINKS—When preparing for march order, you remove the spring bridging links from the PARK position and stow in their travel clamps before the entire weight of the van is lowered onto the wheels, or they'll bend and perhaps break.

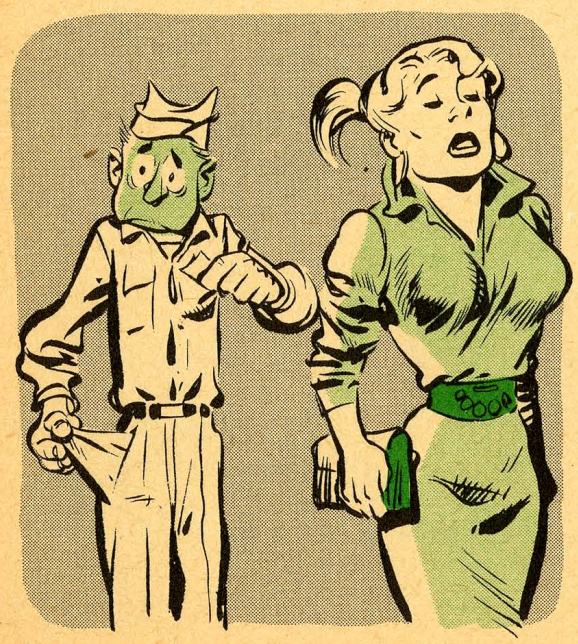


TUBE CHECK—You may be having trouble with the 5C22 Reverse Current Diode tubes in your track and acquisition radar circuits. Before replacing these tubes, check all the leads, and particularly the one from the grid to R11 in the acq circuit, for tightness and condition of insulation. This grid lead in particular, has been known to fail its insulation and arc to ground.

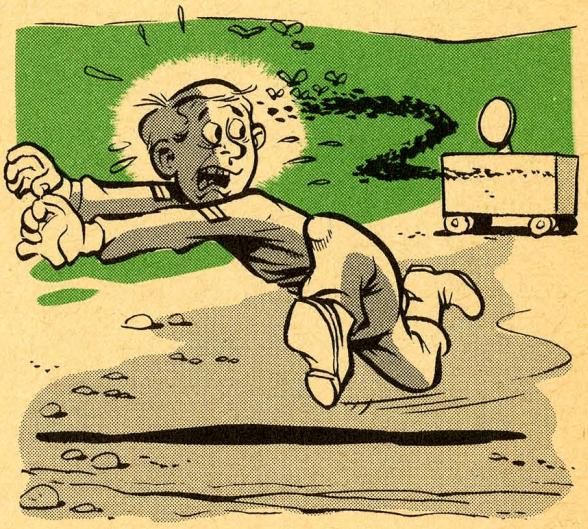


If the trouble is not in the leads, try interchanging the tubes, as one which will not work in the acq circuit may work in the track, and vice-versa.

WATTS DRAGGIN'—There once was a chucklehead who loaded up a generator and drove off without unhooking the cables. He's still buying the new front doors for a system trailer. You, of course, are always careful about this, 'cause you've got other plans for your dough.



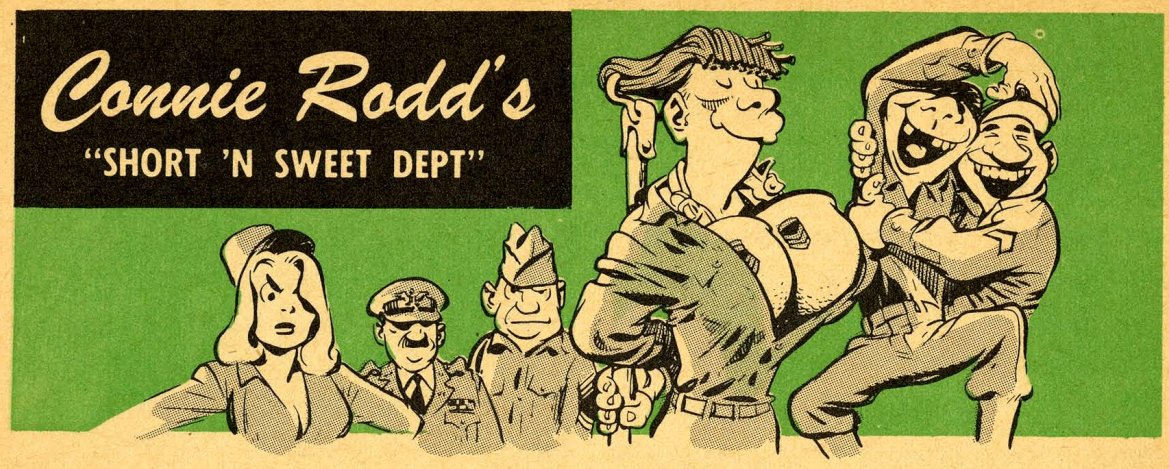
Remember that you have no screens on the air vents of the system van. So if you don't close them when you are not running the system, it could be that you'll spend a perfectly good three-day pass taking a bird's nest out of some chassis (or a "Nest, wasp's, assy, complete w/angry wasps").



If you are plagued by loose control knobs, try putting a little ribbon cut out of brass shim stock over the shaft to tighten them. And be sure you keep the universal joints on the range control clean and lightly lubricated. Close cleaning helps to keep these knobs from sticking, too.

If you are returning any components to Ordnance depots as unserviceable, check them carefully first. If you find one that tests "Good" but doesn't work properly in the system, be sure to mark the UER (Form 468) to say so.

Connie Rodd's "SHORT 'N SWEET DEPT"



Battery cables

Here are the stock numbers of the cable and lugs you need to make up longer center cables to use the older Willard and Exide 6TN batteries with the Delco-Remy types.

Cable, Automotive, low tension, insulated, American Wire Gage No. 1/0, Stock No. H005-0812371.

Terminal, cable, solder, lug, round end, 125 Ampere, No. 1/0 cable, for 5/16 inch stud, Stock No. H004-0181120.

As you know, you need a little longer jumper cable to use these batteries. You make it up out of a length of this cable and two of the lugs. You strip about half an inch of insulation at each end of the cable, clean and tin it and then solder on the lugs. (Remember, for electrical work, use resin core solder for first choice, neutral soldering paste for second, and acid core only as a last resort. If you must use acid core, wash the completed job in lots of fresh water to get rid of any remaining acid.) Then you take the terminal clamps from the old cable and bolt 'em on the new.

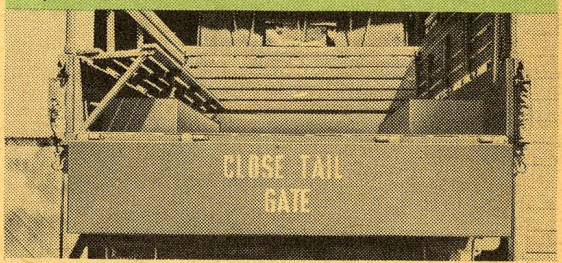
Take a brake ...

Ever get your M37's hand brake adjusted as per TM data and found y'still needed a chock block to park it?

Seems the current manual, TM 9-840 (Jan 51), calls for 1/16" clearance between the lining and the drum. But, from what Connie hears, at this setting it'll usually hold the truck about like fly paper holds a buzzard.

Those in the know recommend adjusting to a clearance of from .008 to .010. Try this, and save the chock-blocking for real emergencies. You'll see it in a TM change.

Gentle re(ar)minder from Camp Roberts



Cornfushus say: Often banging tail-gate way to trouble; so exercising "hindsight" good idea!

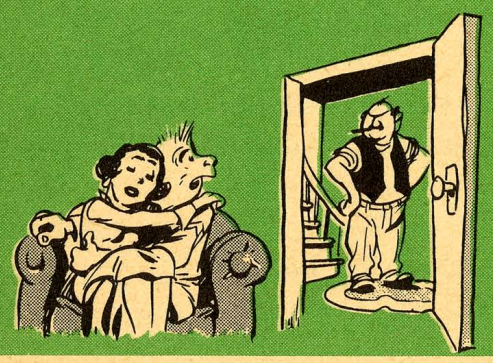
Check and double-check

Yeah, it's a little job unscrewing the thumb screws on those that have 'em, but unless you take the M38A1's battery cover off, how're you gonna check your batteries?

Before they had their 'A1's, some guys were checking the battery under the M38's engine hood and ducking the one at the cowl because of this extra work. Now they're neglecting both batteries on the cowl.

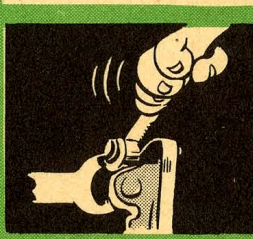
Let's face it. Those covers were put there to keep the box water-tight, if not water-proof. But the batteries have to be up to snuff if you wanna keep hittin' the road. Whether you've got the latest type with the over-center catch or one with the screws, get under the cover regularly.

Open door to trouble



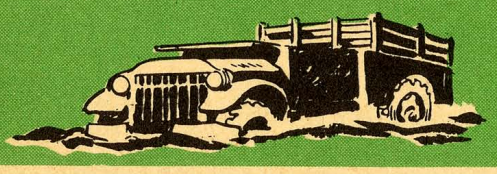
IN YOUR M37 TRANSFER AND DIFFERENTIAL, THAT OL' DEBBIL MUD FINDS AN OPEN DOOR AROUND THE PROP SHAFT SEALS AND COMPANION FLANGES.

IF THE SEALS ARE PACKED WITH DIRT OR SHOW SIGNS OF WEAR—REPLACE 'EM PRONTO. SAME GOES FOR THE COMPANION FLANGES — IF THEY'RE RINGED FROM THE SEAL RUBBING 'EM.



. . . Be sure to torque 'em to 140-160 ft lbs when you put 'em back

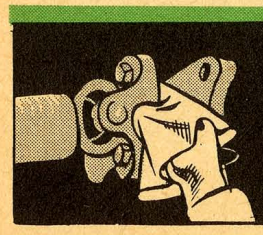
HERE'S WHAT TO DO



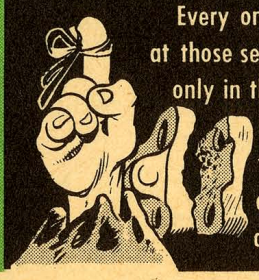
AFTER YOU'VE USED YOUR ¾ TON AS A MUDDER . . .

WHEN THE SEALS AND FLANGES GO AND YOU'RE OPERATING IN SLUSHY MUD, THAT GRITTY DIRT CREEPS IN AROUND THE SEAL AND FLANGE INTO THE TRANSFER ON DIFFERENTIAL AND PLAYS HOB WITH THE CLOSE FITTING PARTS.

YOU'VE GOT YOURSELF A GRINDING COMPOUND IN THOSE PARTS. IN FACT, IT'LL UNDERSIZE THE WORKS SO'S YOU CAN'T MAKE AN ADJUSTMENT WHEN YOU NEED ONE.



Remove, check, and clean the companion flanges on all the three prop shafts . . .

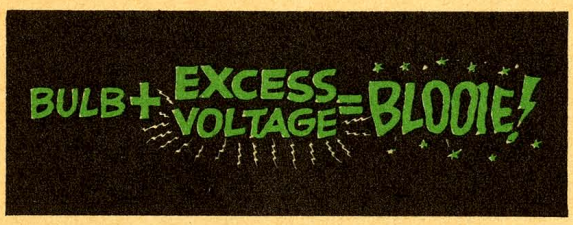


Every once in awhile take a gander at those seals and flanges even if you're only in the soup a wee bit.

Catch 'em before they give your transfer and differential a mud pack— which they don't need.

Bulbs going blooie?

If your tanks are popping their light bulbs right and left, take a quick reading on your generator output voltages. And quick, please, before some of the more expensive equipment burns out. Battalion maintenance or Ordnance will be happy to help you. Call 'em if there's an indication of excess voltage.



2HN battery lifter

Lifting an M38's or M37's 2HN 12-volt batteries by their posts is a one-sided affair. And, since both posts are on the same side, pulling a battery from the carrier with a battery-strap puts extra strain on the posts—you could rip 'em from their moorings.

But here's an idea that'll give your battery a rise, and still keep it balanced.

Use this one-arm bandit for snatching batteries. Bricklayers have been using one like it for a long time for carrying bricks. Pick up and tote your battery with one you can make of steel rod and strap. And if you've got the stuff it takes, aluminum parts would be the light answer to this loaded job.

Smoky jeep

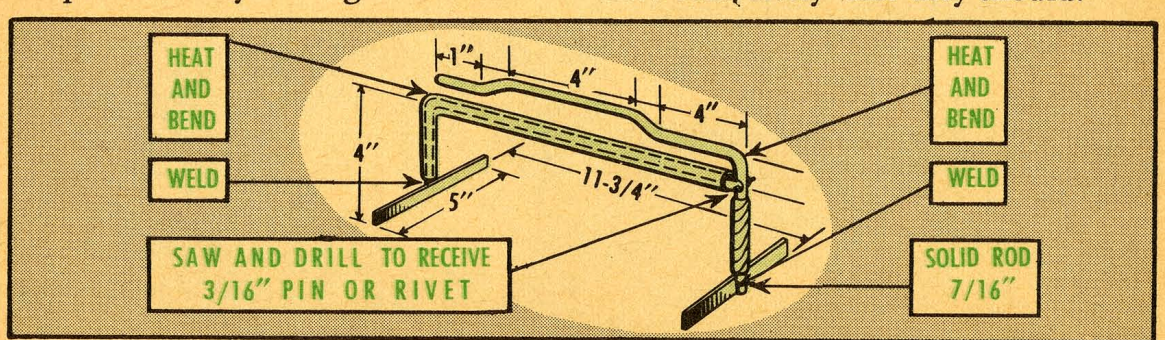
It may not be your M38A1's fuel pump. A loose Donaldson valve in the crankcase vent-system may be why your engine makes like a smudge pot and fouls up its spark plugs.

What's a loose Donaldson valve? Well, it's one what is not tight—but that's not the full story. A loose valve is also a dirty valve.

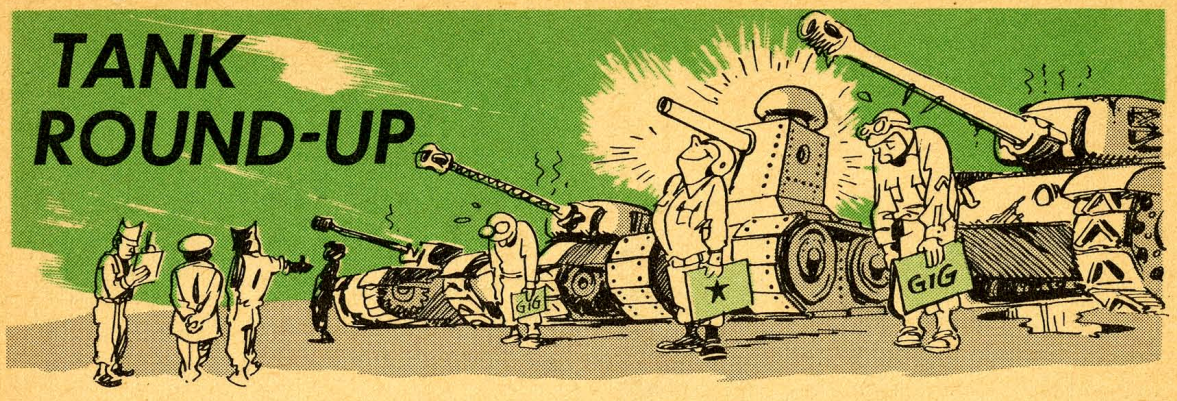
This is a spring-loaded valve that's operated by the manifold vacuum. The valve closes at high vacuum (engine idle) and opens to let in clean air when engine speed increases and manifold vacuum is low. When this valve gets gooed-up and sluggish, it doesn't seat properly. It doesn't close tight like it should, and you've got a loose Donaldson valve.

Keep it clean, and you'll keep it working. Clean the valve and valve seat with some solvent every 10,000 miles or so. Check the spring to see that it works freely. And clean and tighten all the valve's connecting lines or tubes.

While you're at it, how about the control cables on those fording valves? Are they letting the valves open fully and close completely like they should?



TANK ROUND-UP



CROWBAR STOWAGE

If you're herdin' an M41 (T41E1), M41A1 (T41E2), or the M42 (T141) carriage, Pardner, you may have some trouble stowing a very important tool —namely, the crowbar. That critter has a way of shaking loose from its brackets on the rear hull plate and getting lost just when you're likely to need it most.

Situation's not helped much, either, when the bar locking-clamp gets itself banged up by the rear transmission-access-door. Which can happen if the door's not handled properly.

But, a little bit o' welding can take care of all this.

First, to make sure the crowbar will stay put, an extra bracket can be made. Use a piece of steel (⅛ inch is OK) cut to about 6½ inches by 1 inch, squared to fit the shape of the crowbar, and tack-welded to the hull plate some 6 inches to the right of the left-side bracket, as you see in Fig 1.

Then, to protect the clamp assembly from that access door, a chunk o' metal can be welded to the hull to form a door stop—about where X marks the spot in the illustration (Fig 1). 'Course it's gotta stick out far enough to stop the door before it hits the clamp. You can use most anything for this that looks right for the job. Some bright fellas are using an end cut off an old drive sprocket. Worked fine.

One thing you gotta watch in getting a door stop welded on. Regardless of what's used, don't let it get put in the way of the crowbar. Wouldn't want that to end up as somebody's necktie, would you?

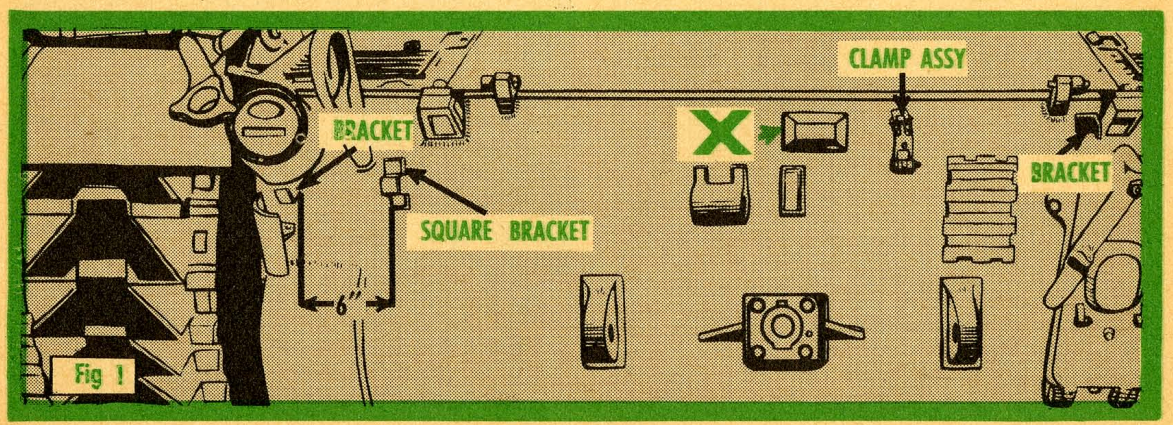


Fig 1

TRACK (AND PLUG) TIPS

Psst, Bud. . . . C'mere. Y'want a coupla sure t'ings on the '48 (M48 suspension system, that is)?

For tapping track-link end connectors back in place, your best bet is that two-pound ball-peen hammer. Sledges and other rough stuff don't pay off. And make sure the wedge is completely removed from the connector before y'do any tapping. They bust easy.

Try to get by with merely loosening the wedge nut, and y'lose out in the stretch. Take 'em out.

(Case y'may be wondering why these connections shouldn't be greased, it's because the main object here is a tight fit. Grease would help prevent rust and corrosion, but would cut down on the gripping quality of the connector.)

Now—if y'wanta parlay—here's some dope on replacing that plug in the road-wheel hub-cap. Always check to make sure that the new one's got the same size and type of threads as the old one. A plug of the wrong type will sometimes go in the same distance and seem to have the same tightness as the right size plug—but actually will be stripping the hub-cap threads.

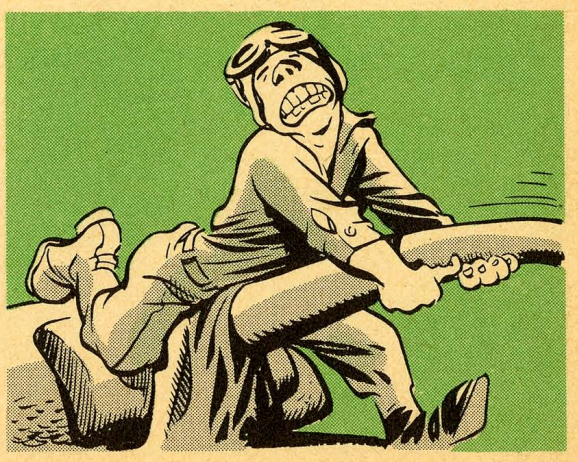
Then you're "scratched" for sure. 'Nother thing to remember is to slap some graphite grease on the replacement plug before it goes in. Then, next time, you can take it out as easy as falling off a tote board.

M48 LUBE ORDER

The M48 tank's lube order (LO 9-7012) has been out for some time. There's no shortage of them—should be one in every tank where it's handy at all times. Get your requisition in to your publications officer now and foil those gig-happy inspectors.

SLOW RISING RODS

If you've stroked the hand supercharge pump and still find the tube slow in rising when you're elevating the M41, M47 or M48 tank gun—accumulator pressure's down. Have Ordnance regulate the accumulator pressure. And then have them check the pressure about once a month to keep things on the up-and-up.



DECAL DEAL FOR M47'S

If your M47 tank speedometer-tachometer has a top reading of 70-MPH, Brother, she's 'way off the beam. When that indicator points to 10-MPH, you'll actually be doing 20.

High speeds can be death to your tank. So if that engine's revved up high and you're rolling mighty fast for the MPH on the dial, don't believe the speedometer—you might be trundling along twice as fast as you think you are.

There's a fix for this, so see if your Ordnance support can get it for you. It's a decal (Ord Stock No. G262-8383272) that makes those off-beat speedometer-tachometers (Ord Stock No. G251-7727448) read right when it's pasted on the dial (Fig 2). It's covered in MWO G262-W7.

Till you get yours, cut a strip of cardboard to cover several of the low-speed figures. Tape it on and write on it figures which are double those directly beneath, so it looks like the right hand dial in Fig 2.

Meanwhile, watch your speed. Leave the records for the Joes in the jets.

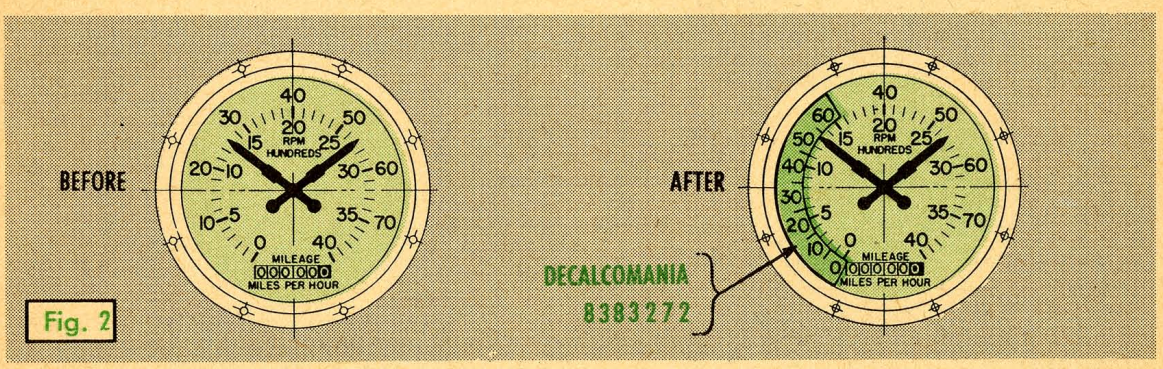


Fig. 2

M46 AND M47 SHIFT POINTERS

Dear Half-Mast,

Do you have any ideas for a gimmick or fix that'll keep our green M47 tank driver from accidentally shifting into reverse when the tank's going forward at a good clip? We're tired of having our heads bashed against steel every time he intends to shift from low to high but winds up in reverse.

Sgt O. R. G.

Dear Sgt O. R. G.,

Sure can . . . cut out these snap shots and paste them on your driver's eyeballs.

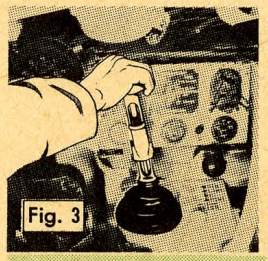


Fig. 3

When tank is moving keep hand on top when steering and shifting.

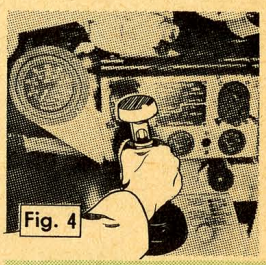


Fig. 4

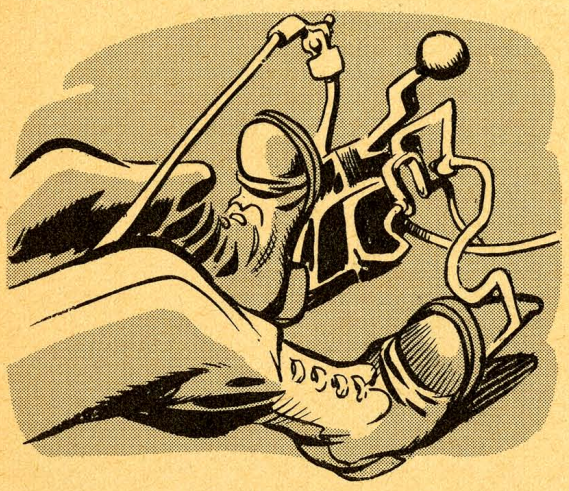
Only squeeze the hand grip when the tank's at a dead stop.

If he keeps these two hand positions in mind when driving, he'll never accidentally shift into reverse.

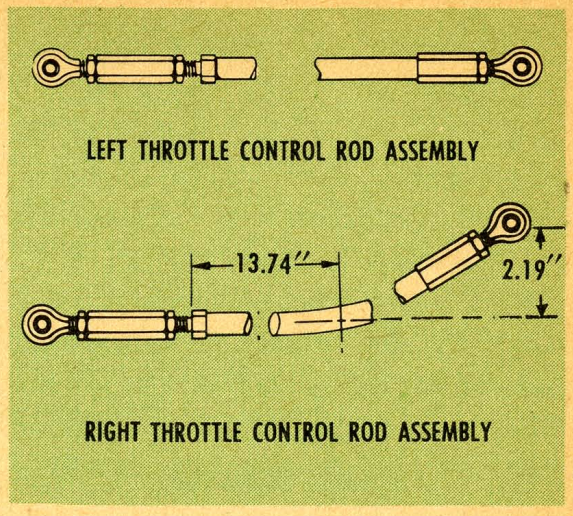
Half-Mast

M47 AND M48 THROTTLE RODS

Between careless engine pulls and big feet, some tank throttle-rods are living a dog's life. Trouble is, your whole tank'll run like a dog if these rods aren't right.

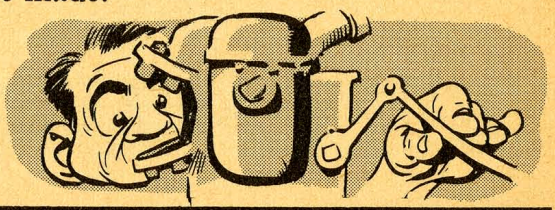


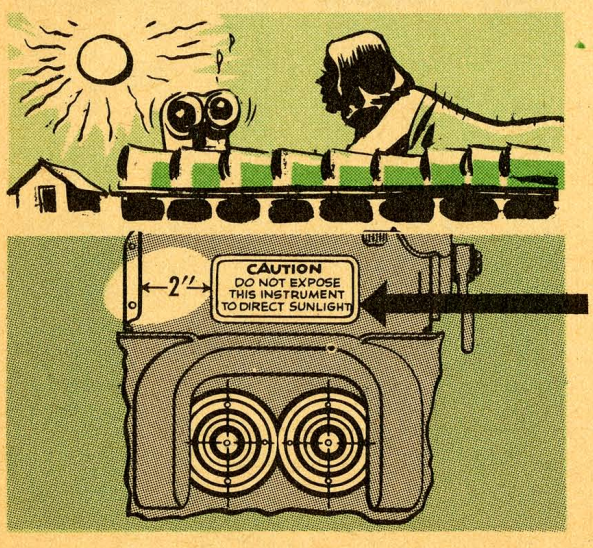
On all your AV-1790 series engines the **left** throttle rod has to be **straight**, while the **right** throttle rod must be slightly **bent**. The right hand rod runs straight from the front for 13.74 inches. (A hair less than 13-3/4.) And then it takes an easy bend so that the eye is 2.19 inches from the straight line. (Call it 2-11/64, or 2-3/16, near enough.)



Easiest way to check a bent rod is to compare it with a known good one.

And when your rods are right, remember the old check for throttle linkage. Does the carburetor throttle open **fully** when the pedal is pushed down? Does it close **fully** (to the idle adjustment) when the pedal is released? If you've got it where it does, you've got it made.





SON, NO SUN

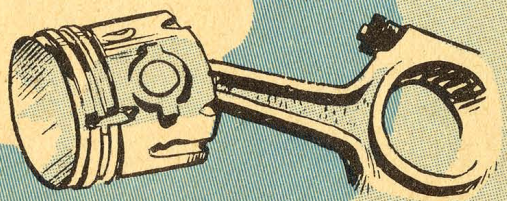
You smart tank men avoid aiming your M19 periscopes directly into the sun. The cathode tubes in your scope aren't made to take the bright rays.

As a reminder—check to see if there's a decal just above the headrest which reads: **Caution**—*Do not expose this instrument to direct sunlight.* If it's not there, better get your Ordnance support unit to apply it in accordance with MWO Ord F235-W12 (24 Sept 53).

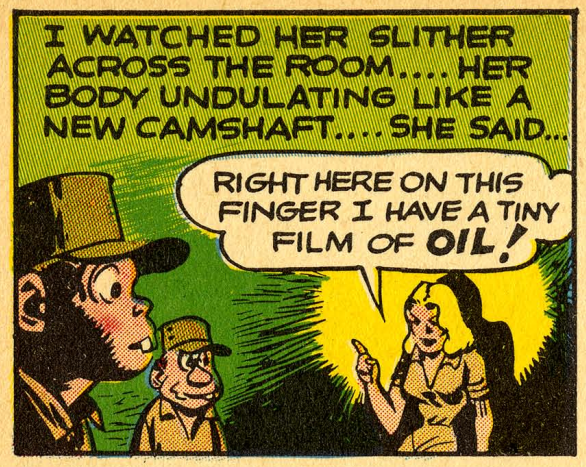
JOE DOPE

OIL AND ITS DIRTY WORK

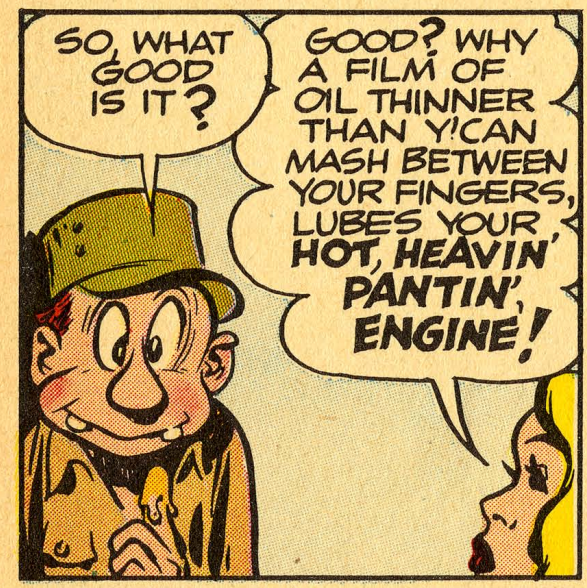
BY NICKY SPITTOONE



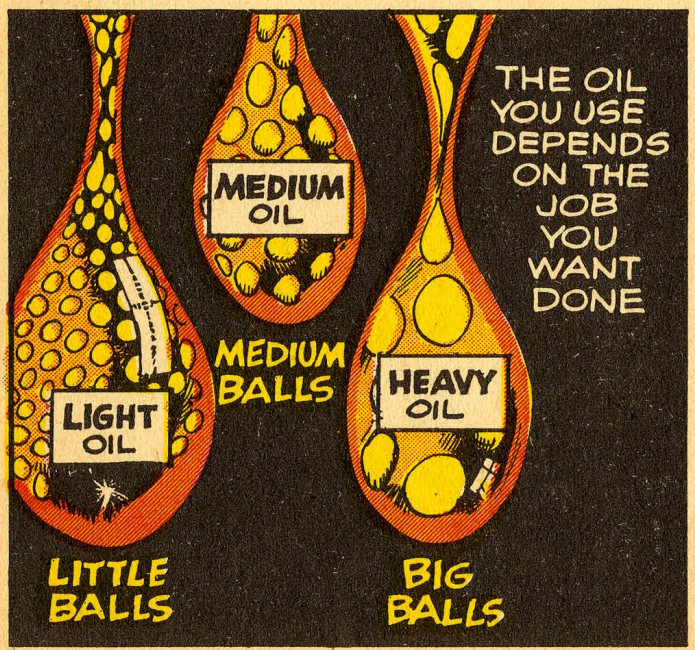
IT LAY THERE.... SCARRED AND USELESS LIKE A DEAD THING OF BEAUTY AND ALL AT ONCE I KNEW IT COULD BE WRAPPED UP IN TWO DIRTY WORDS ...P-O-O-R---L-U-B-R-I-C-A-T-I-O-N. OH GAD, HOW I HATE LACK OF LUBRICATION.... BUT LET ME TELL YOU WHAT OIL'S GOTTA DO.....

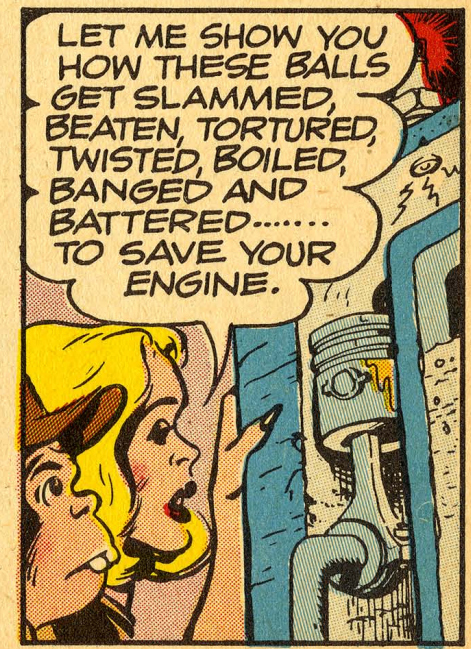

I WATCHED HER SLITHER ACROSS THE ROOM.... HER BODY UNDULATING LIKE A NEW CAMSHAFT.... SHE SAID...
RIGHT HERE ON THIS FINGER I HAVE A TINY FILM OF OIL!

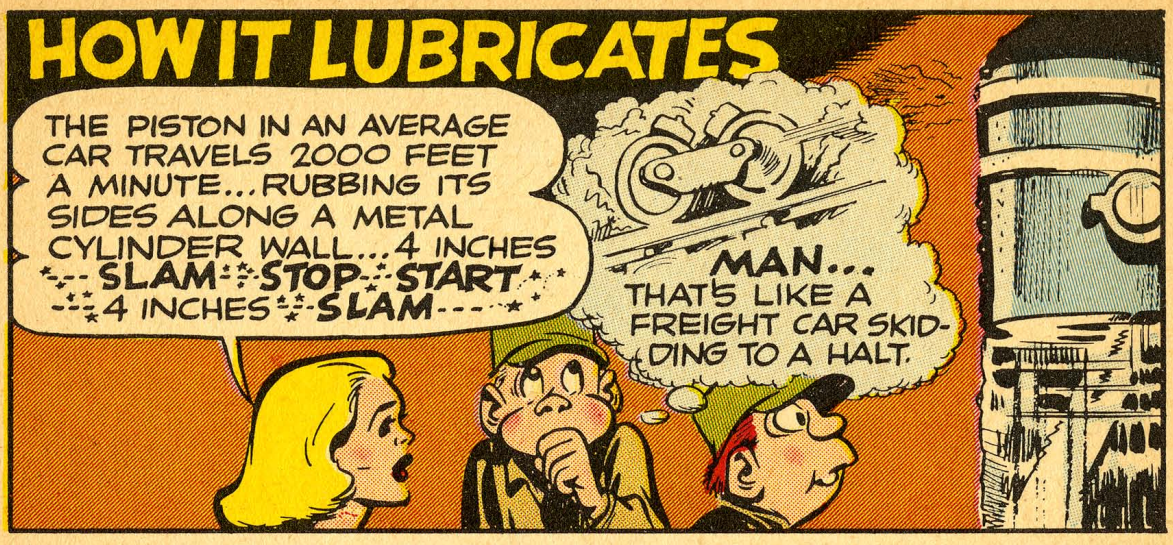
IF YOU HAD MICROSCOPIC EYES YOU'D SEE PLENTY... IT'S MADE UP OF TINY BALLS CALLED MOLECULES ...THEY'RE THE TRICKY DEVILS.

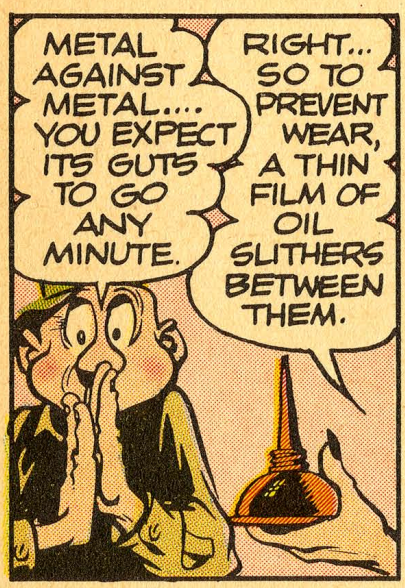

SO, WHAT GOOD IS IT?
GOOD? WHY A FILM OF OIL THINNER THAN Y!CAN MASH BETWEEN YOUR FINGERS, LUBES YOUR HOT, HEAVIN' PANTIN', ENGINE!

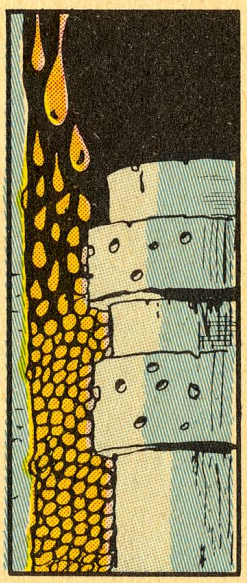
YOU CAN PICK UP STUFF ANYWHERE FROM LIGHT TO HEAVY... HERE, SNUG UP CLOSER AND I'LL SHOW YOU WHAT THEY LOOK LIKE UNDER A LENS... TRUST ME, PALS.


MEDIUM OIL
LIGHT OIL
HEAVY OIL
MEDIUM BALLS
THE OIL YOU USE DEPENDS ON THE JOB YOU WANT DONE
LITTLE BALLS
BIG BALLS

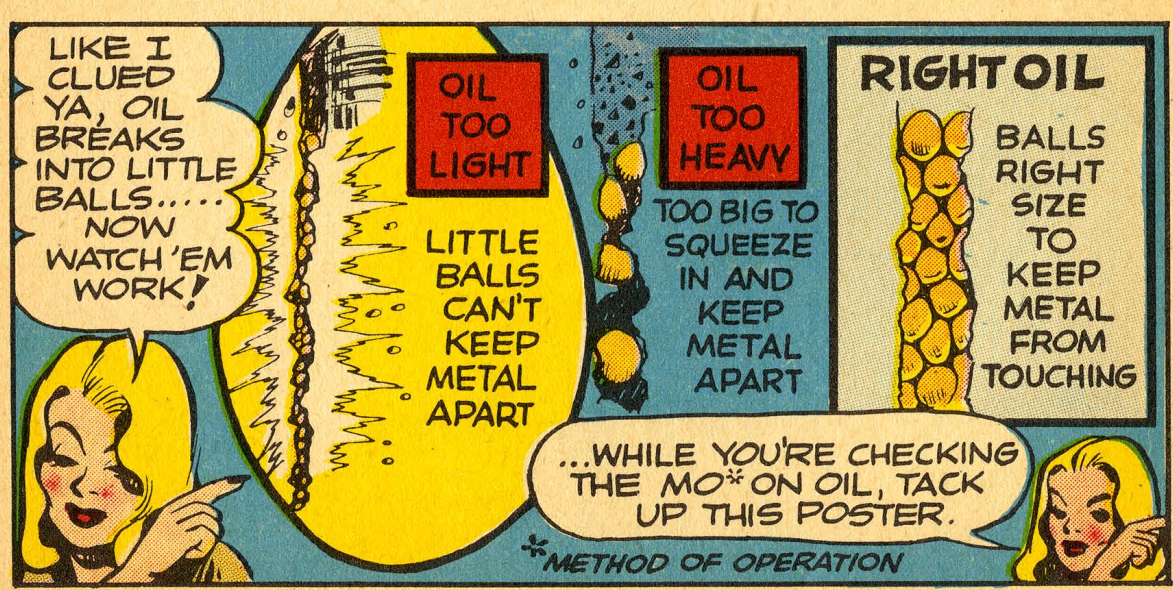

LET ME SHOW YOU HOW THESE BALLS GET SLAMMED, BEATEN, TORTURED, TWISTED, BOILED, BANGED AND BATTERED..... TO SAVE YOUR ENGINE.

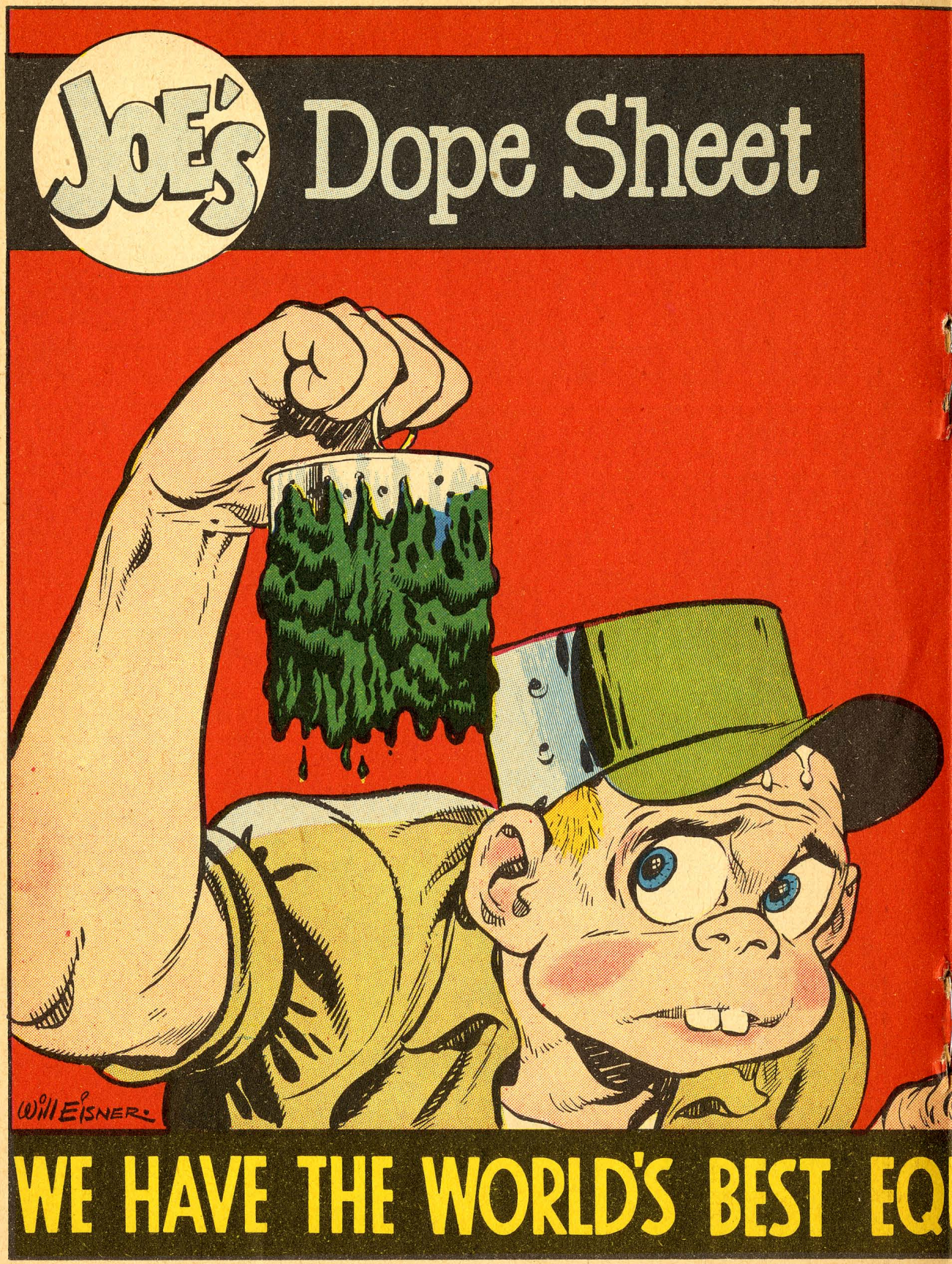

HOW IT LUBRICATES
THE PISTON IN AN AVERAGE CAR TRAVELS 2000 FEET A MINUTE... RUBBING ITS SIDES ALONG A METAL CYLINDER WALL... 4 INCHES SLAM STOP START 4 INCHES SLAM
MAN... THAT'S LIKE A FREIGHT CAR SKIDDING TO A HALT.


METAL AGAINST METAL.... YOU EXPECT ITS GUTS TO GO ANY MINUTE.
RIGHT... SO TO PREVENT WEAR, A THIN FILM OF OIL SLITHERS BETWEEN THEM.

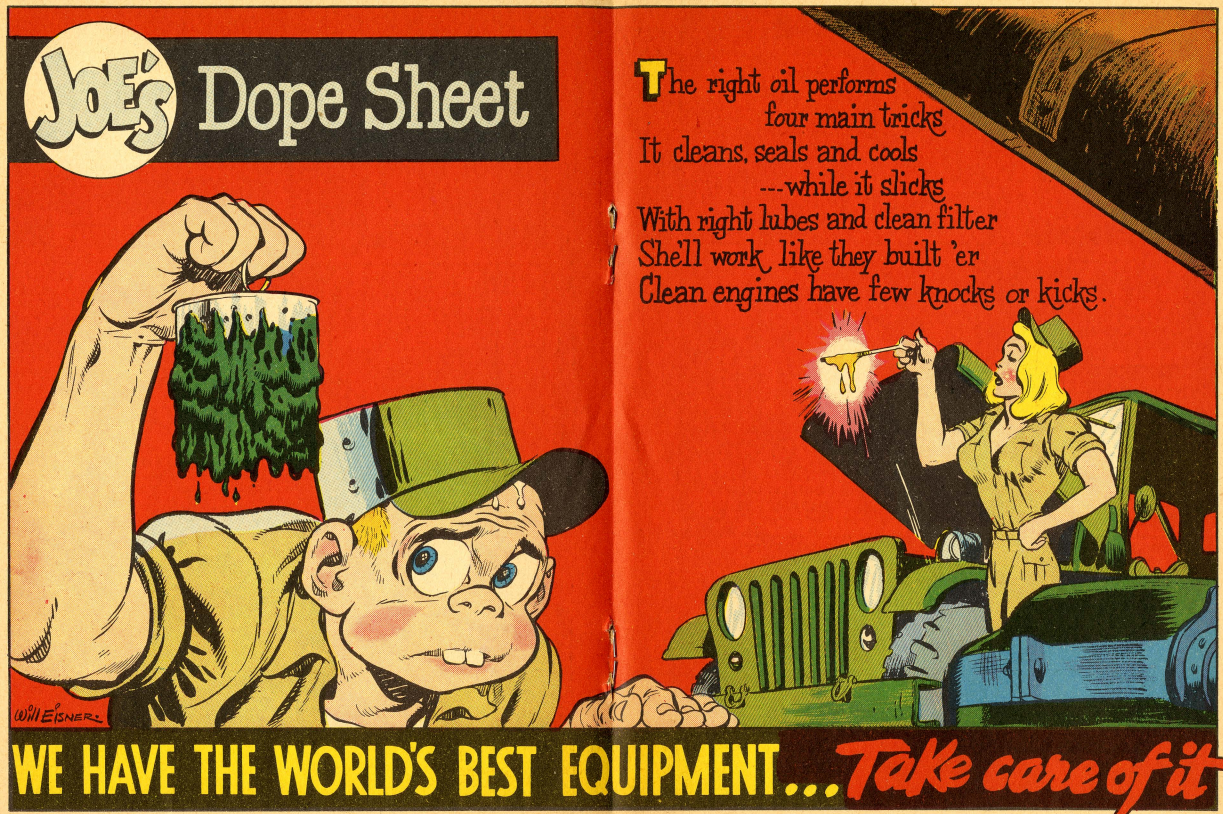


WELL, THAT SHOULD SOLVE IT, EH, CONNIE?
YOU DON'T KNOW... YOU DON'T KNOW ...UNTIL YOU ASK YOURSELF..." HAVE I GOT THE RIGHT STUFF FOR THE JOB?
TM


LIKE I CLUED YA, OIL BREAKS INTO LITTLE BALLS..... NOW WATCH 'EM WORK!
OIL TOO LIGHT
LITTLE BALLS CAN'T KEEP METAL APART
OIL TOO HEAVY
TOO BIG TO SQUEEZE IN AND KEEP METAL APART
RIGHT OIL
BALLS RIGHT SIZE TO KEEP METAL FROM TOUCHING
...WHILE YOU'RE CHECKING THE MO* ON OIL, TACK UP THIS POSTER.
*METHOD OF OPERATION



PRODUCED UNDER SPECIAL LICENSE TO U. S. DEPT. DEFENSE COPR. 1954 WILL EISNER PRODUCT



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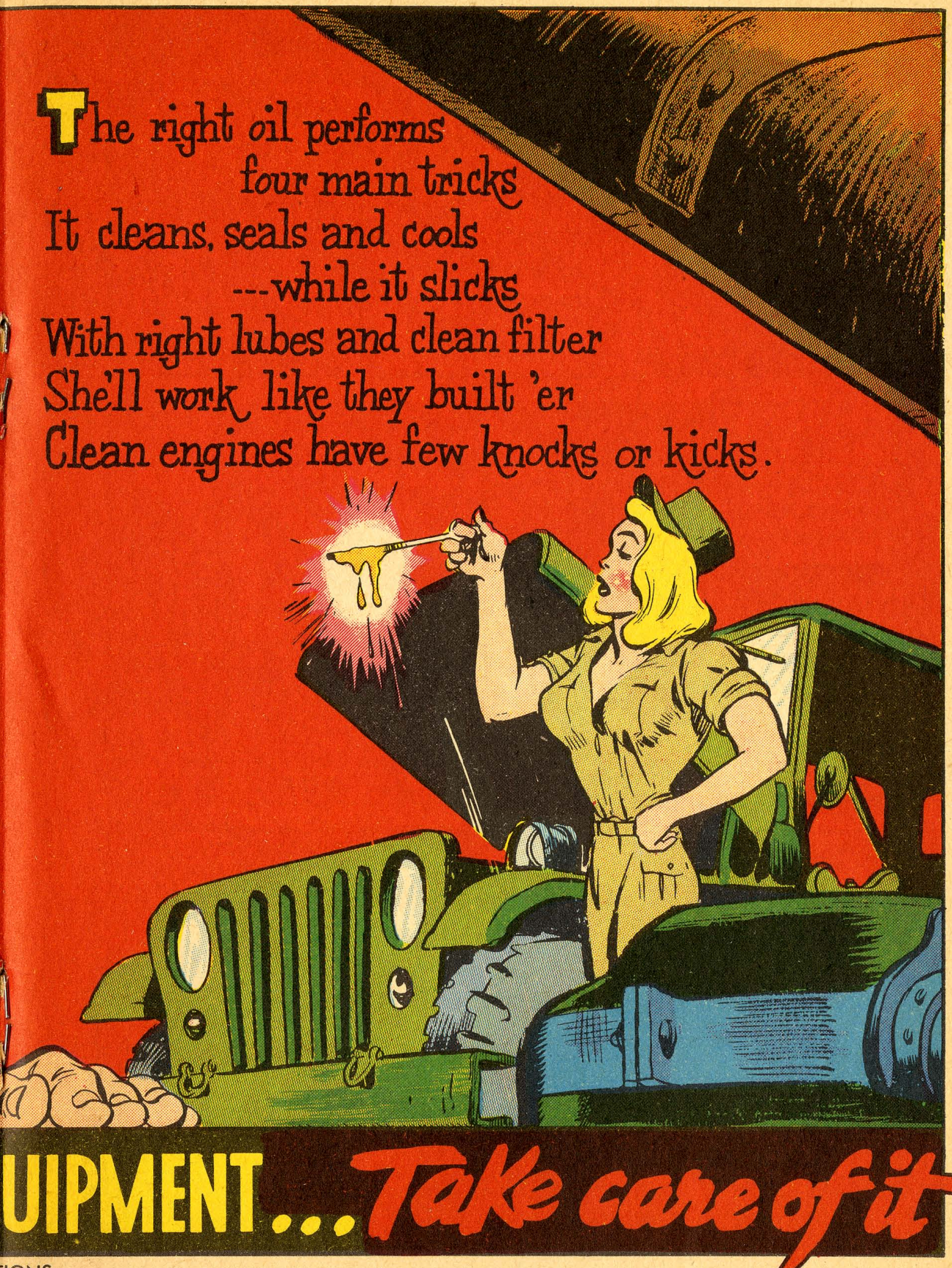
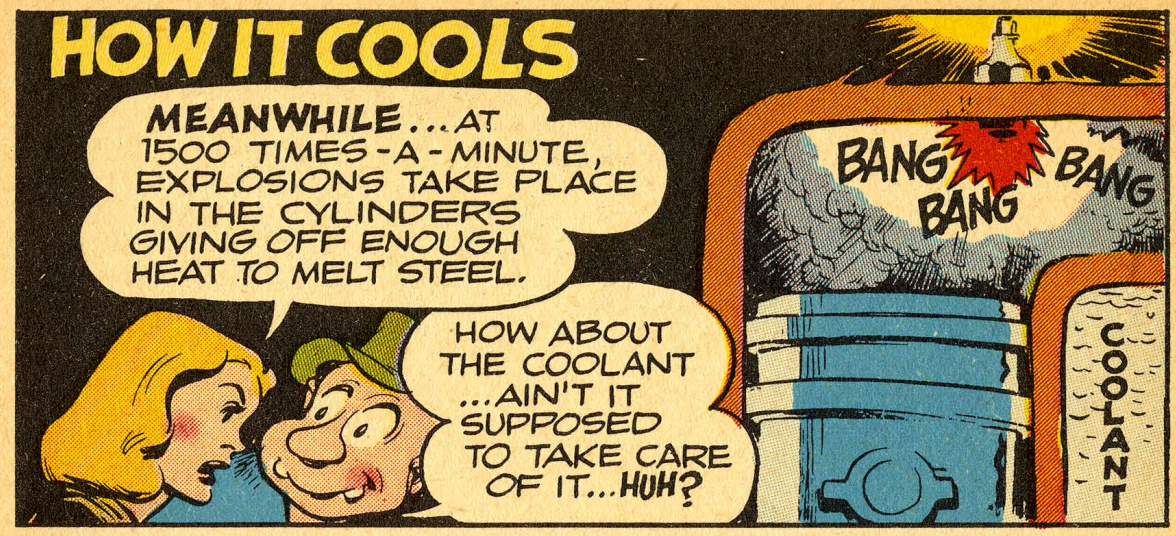
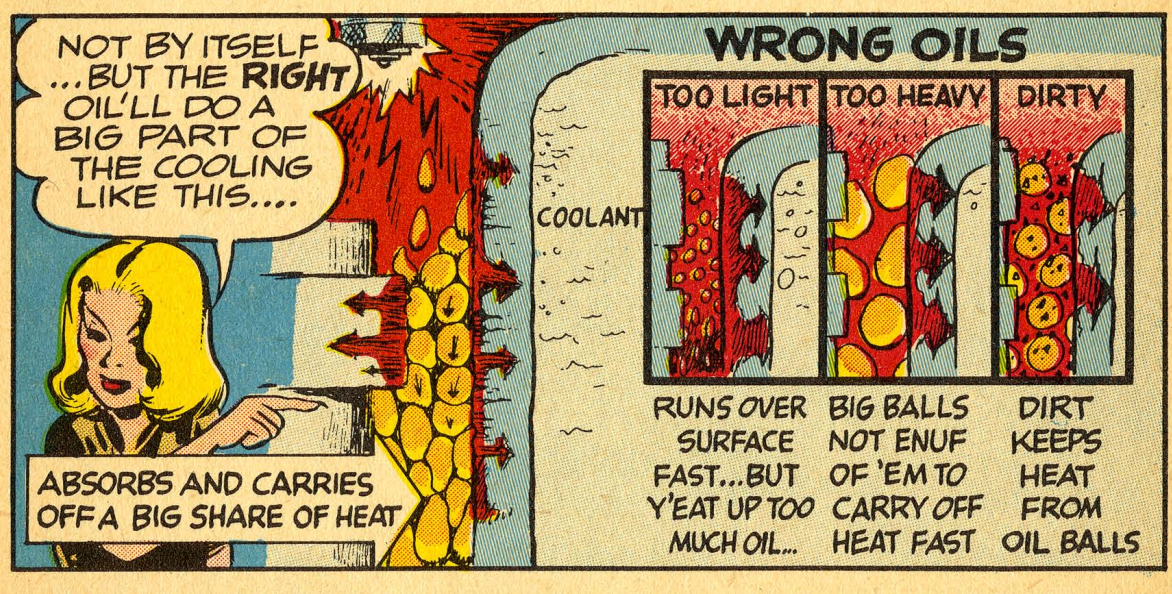
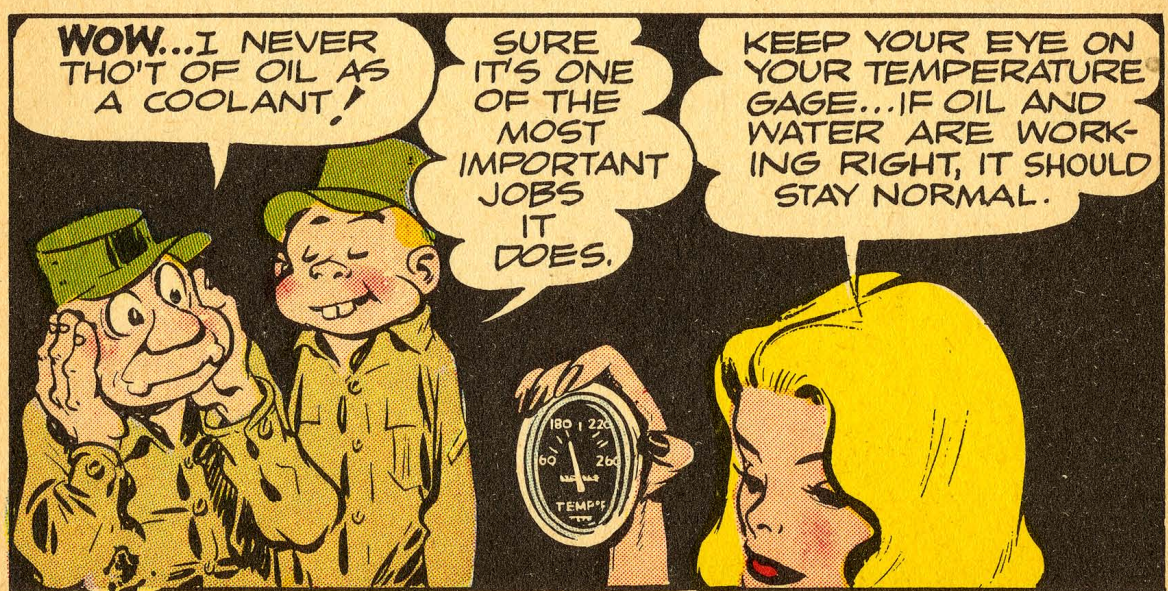
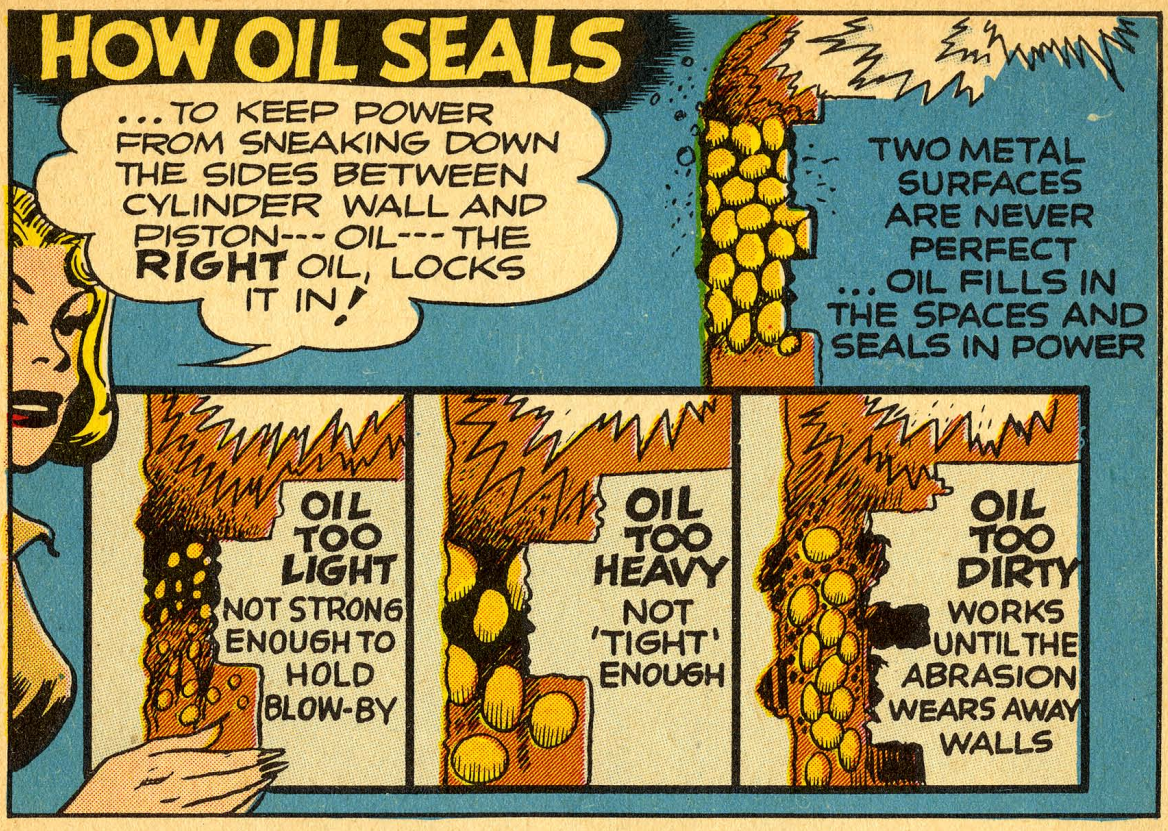

The right oil performs
four main tricks
It cleans, seals and cools
---while it slicks
With right lubes and clean filter
She'll work like they built 'er
Clean engines have few knocks or kicks.
UIPMENT... Take care of it

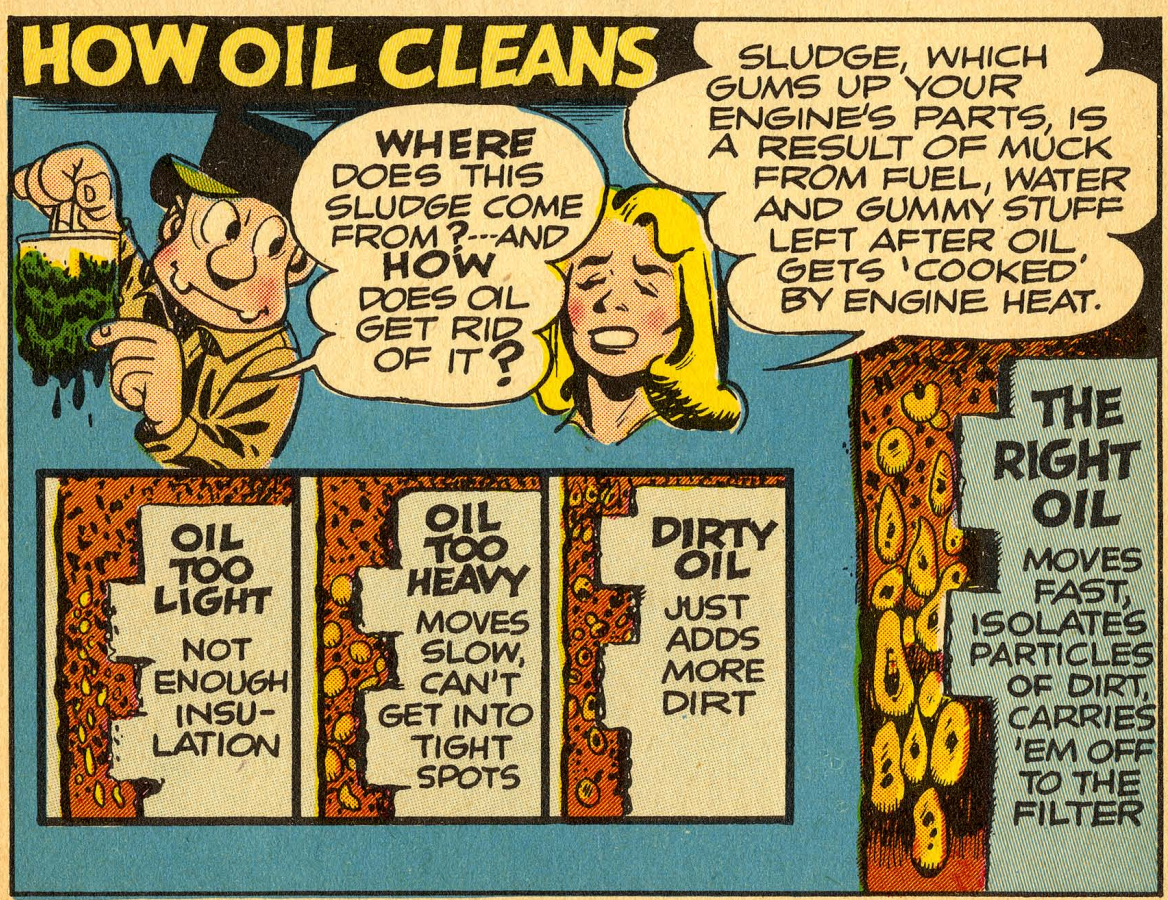
TIONS

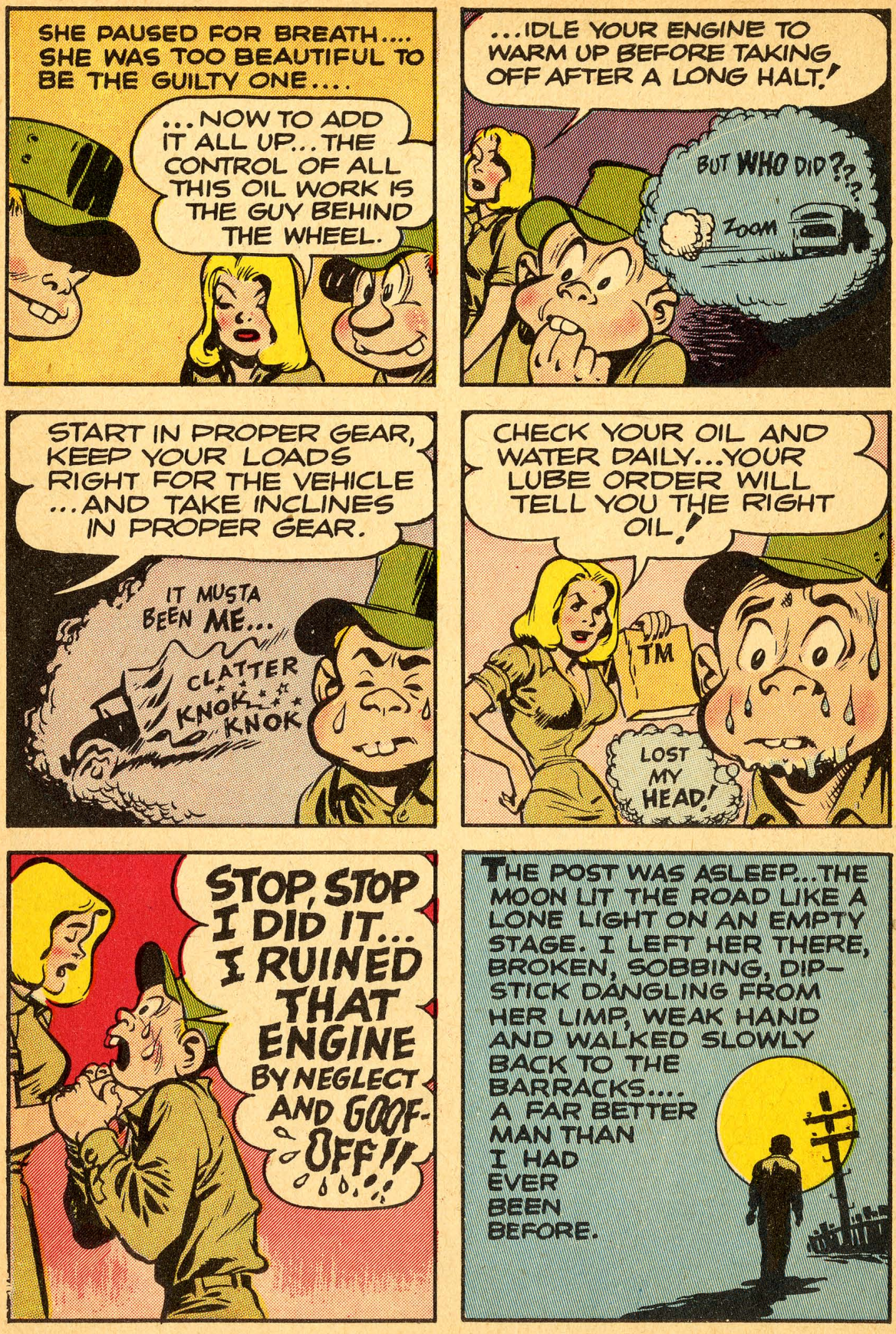

HOW IT COOLS
MEANWHILE... AT 1500 TIMES-A-MINUTE, EXPLOSIONS TAKE PLACE IN THE CYLINDERS GIVING OFF ENOUGH HEAT TO MELT STEEL.
HOW ABOUT THE COOLANT ...AIN'T IT SUPPOSED TO TAKE CARE OF IT... HUH?
BANG
BANG
BANG
COOLANT


NOT BY ITSELF ...BUT THE RIGHT OIL'LL DO A BIG PART OF THE COOLING LIKE THIS....
ABSORBS AND CARRIES OFF A BIG SHARE OF HEAT
COOLANT
WRONG OILS
TOO LIGHT
TOO HEAVY
DIRTY
RUNS OVER SURFACE FAST... BUT Y'EAT UP TOO MUCH OIL...
BIG BALLS NOT ENUF OF 'EM TO CARRY OFF HEAT FAST
DIRT KEEPS HEAT FROM OIL BALLS


WOW... I NEVER THO'T OF OIL AS A COOLANT!
SURE IT'S ONE OF THE MOST IMPORTANT JOBS IT DOES.
KEEP YOUR EYE ON YOUR TEMPERATURE GAGE... IF OIL AND WATER ARE WORKING RIGHT, IT SHOULD STAY NORMAL.
180
220
260
TEMP°F

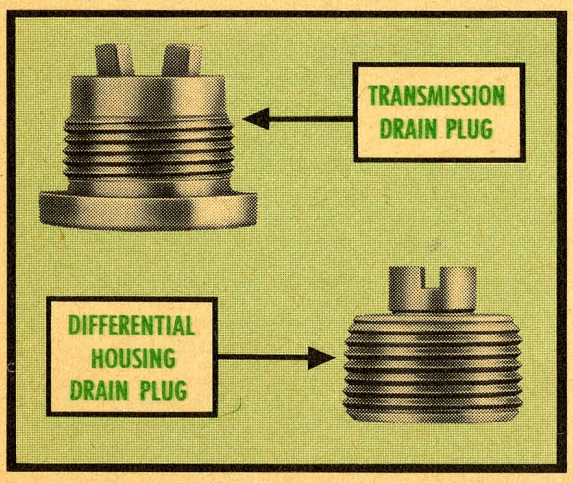

HOW OIL SEALS
...TO KEEP POWER FROM SNEAKING DOWN THE SIDES BETWEEN CYLINDER WALL AND PISTON--- OIL--- THE RIGHT OIL, LOCKS IT IN!
TWO METAL SURFACES ARE NEVER PERFECT ...OIL FILLS IN THE SPACES AND SEALS IN POWER
OIL TOO LIGHT
NOT STRONG ENOUGH TO HOLD BLOW-BY
OIL TOO HEAVY
NOT 'TIGHT' ENOUGH
OIL TOO DIRTY
WORKS UNTIL THE ABRASION WEARS AWAY WALLS


HOW OIL CLEANS
WHERE DOES THIS SLUDGE COME FROM?---AND HOW DOES OIL GET RID OF IT?
SLUDGE, WHICH GUMS UP YOUR ENGINE'S PARTS, IS A RESULT OF MUCK FROM FUEL, WATER AND GUMMY STUFF LEFT AFTER OIL GETS 'COOKED' BY ENGINE HEAT.
OIL TOO LIGHT
NOT ENOUGH INSU-LATION
OIL TOO HEAVY
MOVES SLOW, CAN'T GET INTO TIGHT SPOTS
DIRTY OIL
JUST ADDS MORE DIRT
THE RIGHT OIL
MOVES FAST, ISOLATES PARTICLES OF DIRT, CARRIES 'EM OFF TO THE FILTER


SHE PAUSED FOR BREATH.... SHE WAS TOO BEAUTIFUL TO BE THE GUILTY ONE....
...NOW TO ADD IT ALL UP... THE CONTROL OF ALL THIS OIL WORK IS THE GUY BEHIND THE WHEEL.
...IDLE YOUR ENGINE TO WARM UP BEFORE TAKING OFF AFTER A LONG HALT!
BUT WHO DID??
ZOOM
START IN PROPER GEAR, KEEP YOUR LOADS RIGHT FOR THE VEHICLE ...AND TAKE INCLINES IN PROPER GEAR.
IT MUSTA BEEN ME...
CLATTER KNOK KNOK
CHECK YOUR OIL AND WATER DAILY...YOUR LUBE ORDER WILL TELL YOU THE RIGHT OIL!
TM
LOST MY HEAD!
STOP, STOP I DID IT... I RUINED THAT ENGINE BY NEGLECT AND GOOF-OFF!!
THE POST WAS ASLEEP...THE MOON LIT THE ROAD LIKE A LONE LIGHT ON AN EMPTY STAGE. I LEFT HER THERE, BROKEN, SOBBING, DIP-STICK DANGLING FROM HER LIMP, WEAK HAND AND WALKED SLOWLY BACK TO THE BARRACKS.... A FAR BETTER MAN THAN I HAD EVER BEEN BEFORE.

Honorable Plugs Please to Replace in Correct Honorable Holes

Seems that somebody was doing a complete change of transmission and differential lubricant in an M35 truck. He must have had all the plugs out to drain the housings.



This was OK, if messy, but when he put the plugs back, his troubles began. Happened that he got one of the magnetic drain-plugs from the differential housings into the transmission-filler-plug hole.

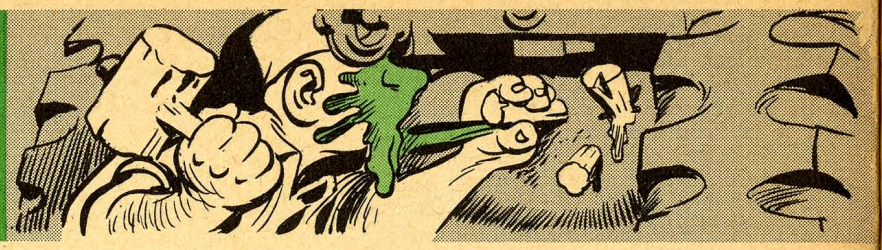
Unfortunately, the magnet sticks out of the plug too far for this to work. The first time the truck was moved, the gears in the transmission hit the magnet and broke it off the plug. With the magnet loose inside the transmission case, and probably sticking to one of the gears at that, you can see why he had a new transmission to put in real soon, can't you?

So leave us be real careful to see that those magnetic drain-plugs, with the little magnet sticking out the end, get back in the differential drain-holes, where they belong. Their magnetic attraction makes 'em easy to tell from the others. Saves statements of charges.

TRICKY CLUTCH

Does your M34 clutch double-cross you on the return? Even the best-adjusted clutch will if you're missing a return spring. Look for it between the clutch cross-shaft linkage outside the transmission. Make 'er snap back at'cha. If it's missing, you need Ord Stock No. G742-7520981.

FIVE-TON FLASHES



TAKE A BREATHER FOR YOUR 5-TONNERS

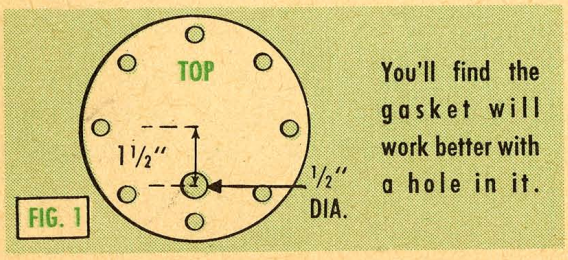
Let's face it. After galloping along in your M51 and M54 5-ton trucks (M39 Series) for awhile, pressure's sure to build up in its differential. And unless the lube in that cavity's kept clear of the vent hole, it'll squeeze and squirt right out.

But the squirt doesn't have to happen. The gasket on the differential's side-cover acts as a baffle to keep the lube inside. Just set it in place with the word TOP on the gasket at the top (natchurly), and it should keep well vent-ilated.

But even so, some lube could pile up behind the gasket. Which is why a ½" hole was added near the bottom of all new ones, starting back in late 1952, as a helper to drain the lube back into the axle again. That new gasket's got the same stock number (Ord Stock No. G744-7346899) as the old one, so if there's no extra hole in the one you get from supply, cut one . . . easy, like in Fig 1.

Sometimes the gasket could bulge against the vent hole itself and stack lube there. Next thing you know, it heats up and pushes that oil out the breather. Well, that's easily fixed. There's a wire tab welded to the differential's inside cover which, when you bend it inwardly, will hold the gasket away from the breather hole and give it plenty of breather space.

Try it on your oozing differential and see if it works.



You'll find the gasket will work better with a hole in it.

SHIPPER KEPT POSTED

If you wanna be sure you'll know when the M62 wrecker's boom shipper is on the loose, paint a white pencil-stripe down the side of each tightened bolt, and continue it onto the mount. That way, when the lines on the bolt and mount no longer meet, you'll know the bolts are slipping. But since bolts stretch, you'll have to paint new lines every time they're tightened or the lines won't meet.

Ordnance has the wrenches that'll tighten the boom shipper snug and fit to pivot posts. The torque for its 1-inch bolts is 600-to-650 ft lbs— that's a lot of squeezin'. Let the Ordnance men do the job for you.

STABLE CABLE

Dear Editor,

We have no end of troubles with the handbrake cables on our M52 5-ton

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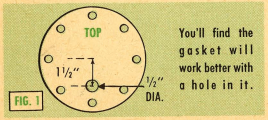

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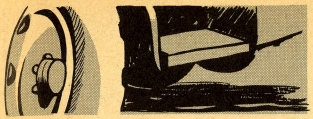
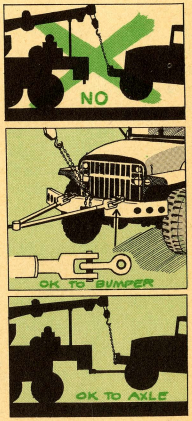


I suggest drilling a hole through the frame side-member and the use of a grommet to carry the cable through. The hole should be just ahead of the left gas tank and behind the cab. By drilling this hole you could feed the cable through with one easy curve instead of the several sharp bends now required.

SFC Peterson
Ft Eustis, Virginia

(Ed Note—We're glad to get your idea. Sounds good. You also could try putting a length of hose over that cable and taping it down so that the cab and frame are wearing on the hose and not on the brake cable.)

TOW-BAR HOOK-UP



Dear Editor,

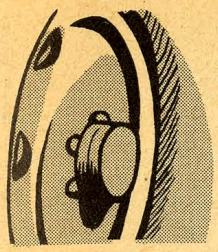
While using the M62 wrecker to pull ¼ to 2½-ton trucks, it's best to hook the tow-bar to the crippled vehicle's front-axle. If you hitch it to the lifting shackles (sometimes called tow-rings), your tow-bar may rub and claw against the wrecker pintle-hook's tip—and that's not good.

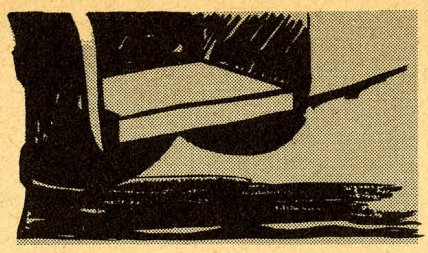
It's better to raise the towed vehicle's front-end with the boom. Then attach the tow-bar to its front-axle. Let the boom hold it up so that the tow-bar is parallel to the ground. And—you're off!

This puts the main weight of the load on the boom and hook, takes the strain off the pintle-hook's upper assembly, and makes the tow-bar a hold-a-way bar. And with its front-end off the ground, the towed vehicle won't develop a mind of its own while hobbling along.

Cpl Donald D. Buss
APO 541, New York

(Ed Note—The tow bar's made to be used on either the lifting shackles **or** *the front axle of the towed vehicle. Where you hook it depends on the conditions under which you're working.)*





tractors. They get beat up where they flex over the frame and the gas-tank foot-plates.

I suggest drilling a hole through the frame side-member and the use of a grommet to carry the cable through. The hole should be just ahead of the left gas tank and behind the cab. By drilling this hole you could feed the cable through with one easy curve instead of the several sharp bends now required.

SFC Peterson
Ft Eustis, Virginia

(Ed Note—We're glad to get your idea. Sounds good. You also could try putting a length of hose over that cable and taping it down so that the cab and frame are wearing on the hose and not on the brake cable.)

TOW-BAR HOOK-UP

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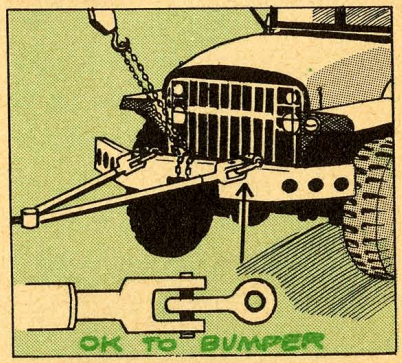

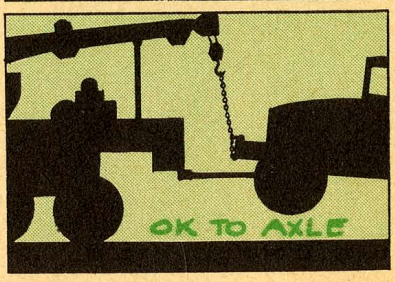

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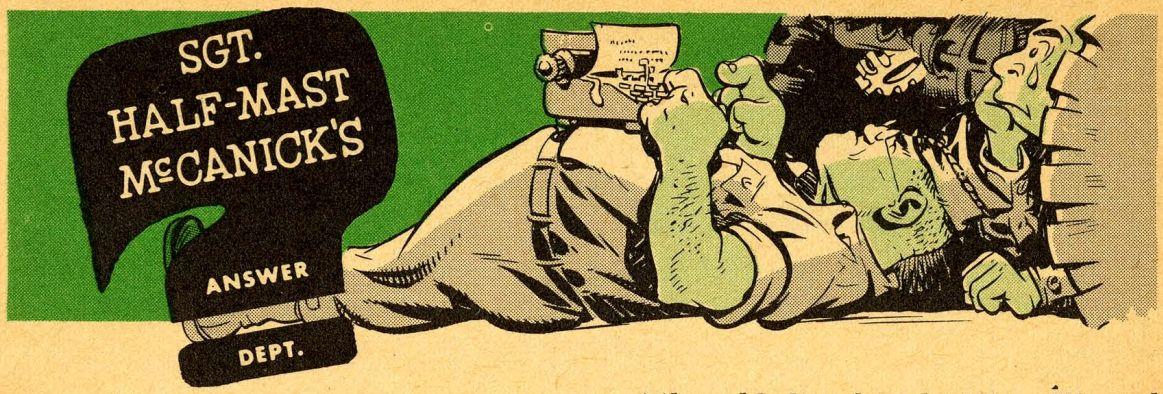


WATERED LIGHTS

Dear Half-Mast,

What's the poop on the water inside the plastic-lensed headlights? I've got a few trucks with those lights and there's condensation in some. After a fording jaunt, some get almost half-full of water. Is drilling a drain hole in it OK?

Pvt N. D. G.

Dear Pvt N. D. G.,

Those plastic jobs aren't strictly sealed beams, though they should be airtight. Unlike the sealed beams, these have bulbs in them and cold water may crack those bulbs when they're lit. It's OK to drill a small hole at the bottom for the water to get out, and then reseal it with permatex #2, (or the hardening variety if you like). Later production has been changed to take care of this.

Half-Mast

CABLE LABEL

Dear Half-Mast,

My problem is how to get an inter-vehicular electrical cable for the latest type of ¼-ton, 2-wheel trailer, M100. The cable listed in the SNL will work on some trailers but won't replace the cable on the later type.

Lt D. A. S.

Dear Lt D. A. S.,

The Ordnance stock number for that cable is G747-8382999. The first of those cables were sent to supply before the stock number was assigned. But you'll find the contract number, DA-20-113-Ord-6809, on the label. If your supply room has any with only the contract number on it, have them add the Ord stock number, too.

Half-Mast

A GIG'S NO GAG

Dear Half-Mast,

We had an IG in here a short time back and he gave us a nice gig on not having TM 21-305 and lube orders in the glove compartments of our commercial-type vehicles.

I can't find anything that states these items should be carried. Please enlighten me.

Lt R. W. M.

Dear Lt R. W. M.,

Here's what para 14 of TM 38-660 (Apr 50) says:

"Lubrication orders and the vehicle technical manual will be carried in tactical-type vehicles used for administrative purposes. Manufacturers' operators' manuals will be carried in all commercial-type vehicles whenever practicable."

So if the manufacturer's manual wasn't available, and you had a due-out slip from AG to prove it—you should not be "gigged."

Now about that TM 21-305. Every driver gets one (or should get one) when he gets his driver's permit. From then on out he has to have it with him whenever he drives a vehicle, like it says on page 1 of this manual. So—if a driver was assigned to the vehicle, then he should have had his TM with him.

Looks like they've got you covered from every angle.

Half-Mast

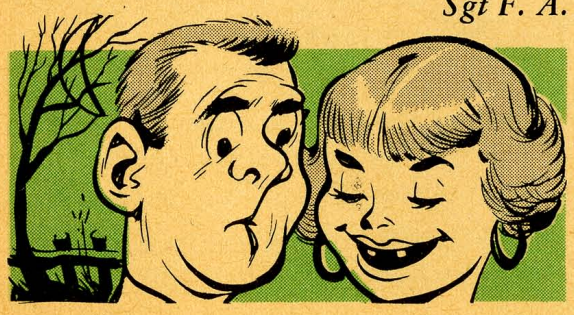
TOOTHLESS

Dear Half-Mast,

What's with those M37 hand-brake-lever ratchet's teeth? I've noticed lately that they're chipping or being rounded off and won't stay put when the brake's on. We tried welding on more metal and then filed it to make new teeth. But they don't last long.

What do you suggest?

Sgt F. A.



Dear Sgt F. A.,

The usual way the M37's ratchet's teeth get blitzed is with a rough right hand. The driver who puts on or releases the brake without pressing down its push-button far enough is dragging the pawl. That could make it toothless.

Not that it'll wear easily—the ratchet's pawls and sectors are hardened to last. But when they go, a new Sector, hand brake lever Part No. G741-737-3751, or a new Pawl, lever Part No. G121-0334000, should be installed. You should be able to get them through regular supply channels. If you can't—what you're doing is OK as a temporary fix until you can—reweld and file new teeth. And when you weld, bead a hard metal like Electrode, welding, Stock No. 46-E-11209-75.

Remember though, to cut out the trouble to begin with, press the lever all the way when you handle the brake.

Half-Mast

THE HEAT'S ON

Dear Half-Mast,

I'm having all kinds of trouble with corroded battery carriers in my M38 and M135 trucks. So far I've had no trouble with my M37 trucks.

I've had the guys clean with soda, dry and paint with acid resistant paint, and still the corrosion comes through. We've even scrubbed them with a steel wire brush and still no good.

I might add that we're not overfilling the batteries, and they're not overcharging and boiling out. But what does it?

Sgt J. McC.

Dear Sgt J. McC.,

Those batteries under the hood in the M38 and M135 will warm up more from the engine's heat than those in the M37 that are away from the engine and under the right-side seat in the cab. Electrolyte in all batteries evaporates through the caps' vents and causes some corrosion of the metal parts nearby. But the added heat from the engine in the '38 and '135 results in greater evaporation and therefore extra corrosion. The batteries could explode if the gas didn't escape.

If your batteries corrode more than they should, have maintenance check your regulator. M135's often average too high a voltage—29 volts when they should average about 27½. Batteries may overcharge without boiling and excess electrolyte get out through the vents, doing damage so's you can't tell why.

Half-Mast

BRAKE DOWN

Dear Half-Mast,

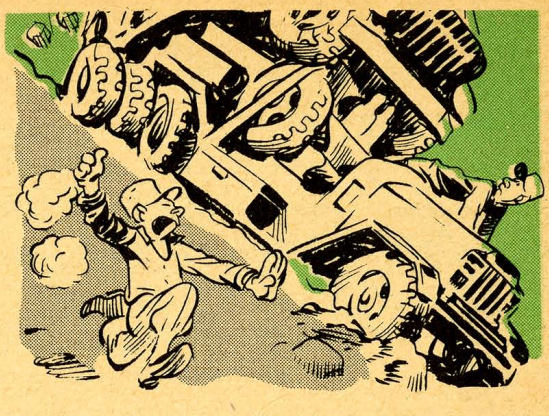
A buddy of mine says you can't use an M62 wrecker in anything below third gear, low-range, to tow a truck down a slope. Is this true?

Cpl D. D. B.

Dear Cpl D. D. B.,

Sorry, but your buddy's all wet on this one. The M62 can tow in any gear. And the lower the gear the more braking power you get.

As a matter of fact, you can even brake a heavy load downhill, in low-low. But you gotta remember a couple of things. For one, always go down in no higher gear than you can go up the



hill with the same load. And, never use the clutch to pick up speed.

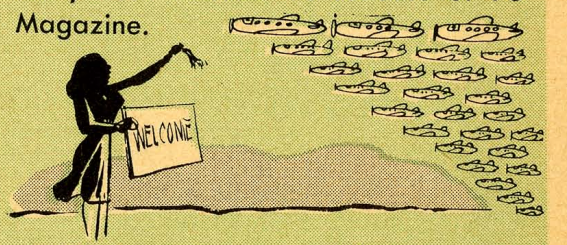
By that I mean throwing in the clutch to coast and pick up speed, then letting it out suddenly to serve as a brake. You can tear the guts out of any truck's engine or clutch doing that.

Just stay in the same gear, keep your foot off the clutch, use the foot brake—as required to avoid excessive engine speeds—all the way down, and you'll do OK. This method'll bring you down safely in any conventional drive truck.

Half-Mast

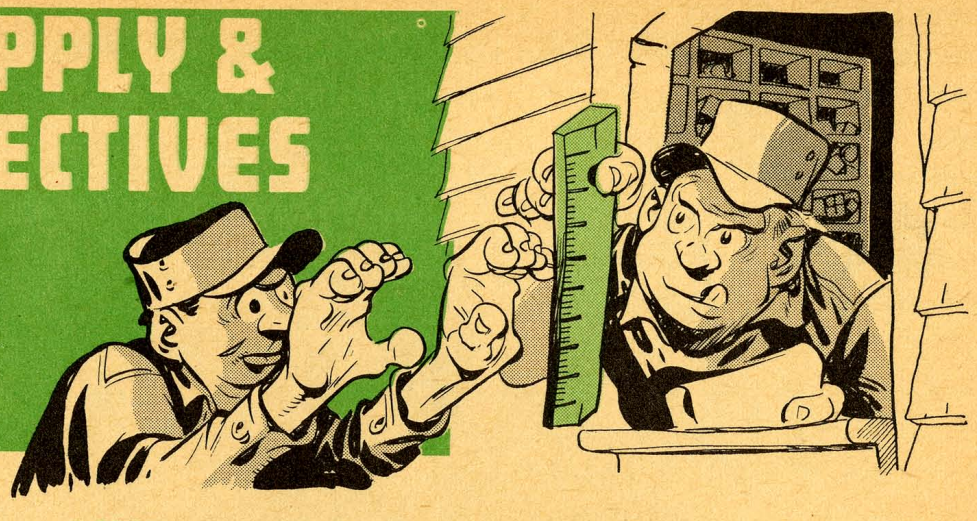
AIRMEN, WELCOME

Here's a hearty welcome to men of the Air Force who have just joined with the Army and Marines as readers of PS Magazine.



When you have a problem or a suggestion on Ordnance or Engineer equipment, just let Sgt Half-Mast hear about it. He punches nobody's ticket . . . and he's a better listener than your chaplain.

SUPPLY & DIRECTIVES



LIKE 'TWAS SAID BEFORE

Gripin's not going to improve your tools, disposition, or heal your skinned knuckles.

Didn't 'cha know you can send a UER on tools, same's anything else?

You might be able to substitute one wrench for another.

You might be able to make something to use in its place.

Think of the poor Joe who doesn't have substitute tools.

You can help him.

How?

By sending a UER (Form 468) to Chief of Ordnance (Ordnance items) and to Chief of Engineers (Engineer items).

Tell them what tool's irking you. Let them know what's wrong with a tool.

If it slips off when you're using it, tell them why. Was it design? Was it construction? Was it production?

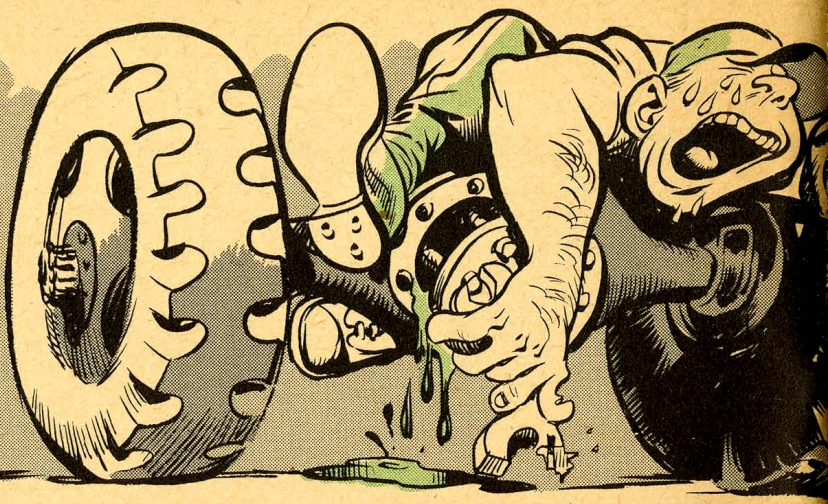
If it doesn't fit like it should, let them know.

Your idea of the kind of tool that would do the job might help.

Here's your chance to put in your two-cents worth.

BUCK UP, SARGE, DON'T LOOK SO SAD . . . TOOL

IT'S YOUR JOB



Do you ever need a certain tool for a job only to find your outfit doesn't have it? So you borrow from the guys next door and then somebody in that outfit has to wait until he can get it back from you. Add a few more tools and a few more outfits and things get to be a mess. And usually they're tools your outfit can get and should have.

Now, maybe whoever's in charge of tools checks 'em out and in proper every day. But if he skips details like tool inventory and requisitioning, those gaps that cause the borrowing will never be plugged.

You can order anything from one socket to the whole tool set. So plug the gaps in your sets, will ya? You'll save yourself and your unit a lot of pain in the end.

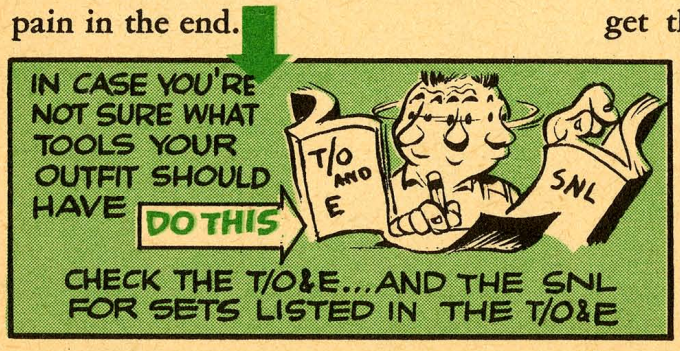
Ord 6 SNL'S for the five most popular

TOOL SETS

General Mechanic's
2nd Echelon No. 1, Common
2nd Echelon No. 1, Supplemental
2nd Echelon No. 2, Common
2nd Echelon No. 2, Supplemental

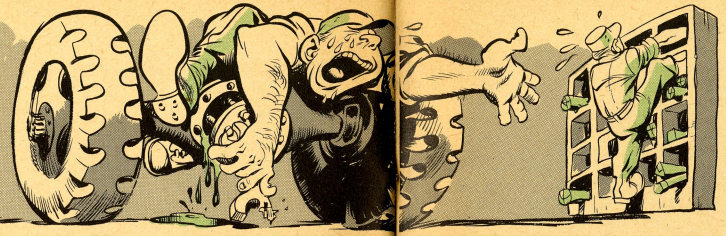
If you should need an entire tool set, you'll find the stock number at the beginning of the SNL listing. Check your local ground rules to see if your supply unit wants you to list each item and its stock number on the requisition or if you use the most widely accepted procedure of giving only the set's stock number.

What with shortages, you may not get the whole set. Take inventory as



BUCK UP, SARGE, DON'T LOOK SO SAD . . . TOOL INVENTORY'S NOT THAT BAD.

IT'S YOUR JOB



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Ord 6 SNL'S for the five most popular tool sets for organizational maintenance.

TOOL SETS

General Mechanic's
2nd Echelon No. 1, Common
2nd Echelon No. 1, Supplemental
2nd Echelon No. 2, Common
2nd Echelon No. 2, Supplemental

SNL

J-10, Sect. 4
J-7, Sect. 1, plus Changes 1-4.
J-7, Sect. 2, plus Changes 1-2.
J-7, Sect. 3, plus Changes 1-5.
J-7, Sect. 4, plus Changes 1-3.

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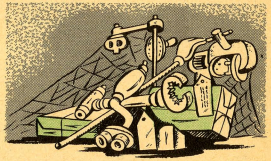
Wait for due-outs whatever is a reasonable time in your supply set-up. Then check your ground rules again to see if you should re-order after a certain number of days or if your supply unit keeps requisitions active as long as there's an item to be filled.

In any case, if a re-order isn't in line, you can remind 'em you're still alive and kicking by filling out another request. Put the original issue slip number on it, give stock numbers of missing items and note on it, "This is to complete shortages in—" (whatever tool set you order). As tools come in you gotta keep your packing list up-to-date—it's supposed to be anyway since your property book should show the same items missing in each tool set as are marked missing on the packing list.

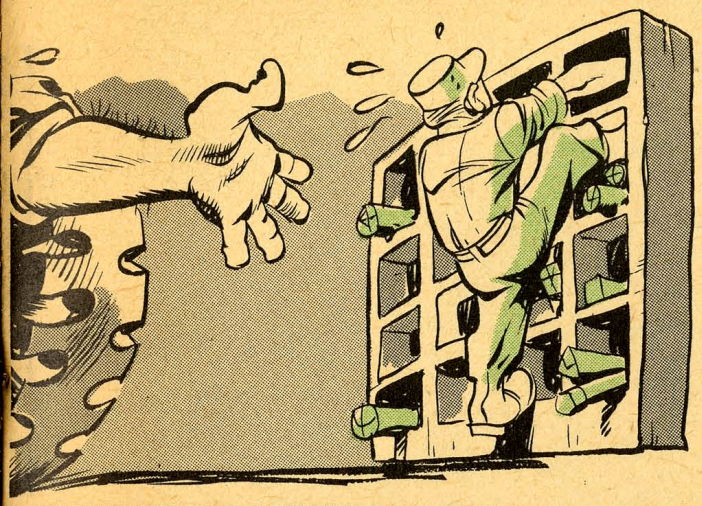
There may be tools in your sets, new or old, that you don't want because you never use them. If so, you'll be in line with the drive to save on money and equipment if you recommend through your CO that they be turned in. Your authority is DA Circular 33 (May 53).



When you've got everything under control, keep it that way. When you check tools out on hand receipt each day, be sure you get them back. Take inventory as often as your best judgment tells you it should be done. You're supposed to do it at least once every six months, but you probably need it more often. Use that packing list you've kept up-to-date for the job.

So, now there's no goofing off because you don't know. Time? You just **take** the time.

INVENTORY'S NOT THAT BAD.



tool sets for organizational maintenance.

SNL

J-10, Sect. 4
J-7, Sect. 1, plus Changes 1-4.
J-7, Sect. 2, plus Changes 1-2.
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J-7, Sect. 4, plus Changes 1-3.

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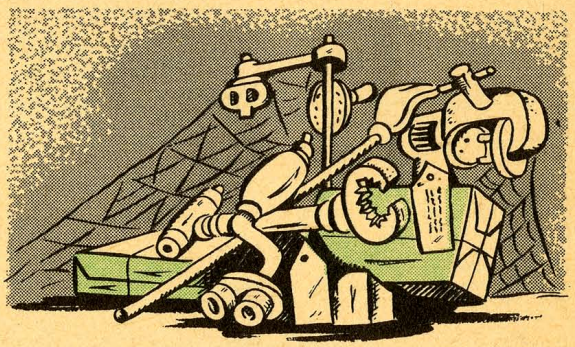

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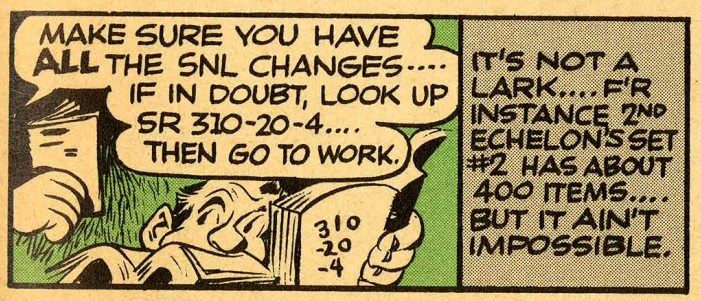


THE SCOOP

HERE'S A LIST OF ADDITIONAL OFFICIAL PUBLICATIONS ON ORDNANCE EQUIPMENT WHICH ARE OF INTEREST TO A LOT OF YOU.

SNL'S

Ord 8 SNL A-55, Sec 50, Mount, ring, M49, M49A1, M49A1C, M49C; mount, truck, M32, M36, M36A1, M36A2, M37, M37A1, M37A2, M37A3, M50, M56, M57, M58, M59, M60, M61, Mar 54

Ord 3 SNL B-1, Major items, major comb Gp B, Mar 54

Ord 7 SNL B-29, Revolver, cal. .38, Mar 54

Ord 3 SNL D-1, Major items, major comb Gp D, Mar 54

Ord 9 SNL D-50, Mount, 155-mm how., M80 (T167), Mar 54

Ord 9 SNL F-235, Vol 19, Periscope, T38, Mar 54

Ord 9 SNL F-350, Vol 5, FCS T38, list svc parts, sys cable T31E1, Mar 54

Ord 8 SNL F-391, 'Scope, elb., M92D, Apr 54

Ord 8 SNL F-392, Mount, 'scope, M90, Mar 54

Ord 8 SNL G-249, Vol 1, Winteriz equip, heater, personnel, Feb 54

Ord 8 SNL G-249, Vol 2, Winteriz equip, heater, engine, Mar 54

Ord 8 SNL G-249, Vol 3, Winteriz equip for slave kit M40, Mar 54

Ord 7-8 SNL G-265, Bulldozer, tank mtg, M4, Feb 54

Ord 9 SNL G-279, Howitzer, 155-mm, SP, T194, Mar 54

Ord 7 SNL G-716, Power unit (Willys engine; Sig Corps models PU26U, PU26A/U, PU58G, PE95F, PE95G, PE95H, PE95K, PU107U, PE182, PE183A, Feb 54

Ord 7 SNL G-742, Truck, cargo, 2½-ton, 6x6, M34, M35, M44, M45, M46, M47, M48, M49, M50, M59, M108, M109, M275, V17A/MTQ, V18A/MTQ, Feb 54

Ord 7 SNL G-780, Power unit, Willys engine (Model CJ-3A), Feb 54

Ord 6 SNL J-10, Sec 23, Tool set, GM el'tron component repairman (Corporal), Mar 54

Ord 6 SNL J-10, Sec 24, Common tool sets issued by mil occup spec (Mos): el'tron FC equip repairman, Apr 54

Ord 6 SNL J-16, Sec 47, Tool sets, fld, depot maint, elevat, travers mechanism tanks, M46, M46A1, M47, M41, Apr 54

Ord 6 SNL J-16, Sec 58, Tool sets, fld, depot maint engine, Continental series AO1-268, in carrier, cargo, amphib, M76 (T46E1), Mar 54

Ord 6 SNL J-16, Sec 62, Tool sets, fld, depot maint, transmission, GMC hydramatic 302M used in truck, M135, M211, M215, M217, XM220, M221, M222, Veh arm inf, T59, Mar 54

Ord 6 SNL J-16, Sec 65, Tool sets, fld, depot maint, oil-cooler fan, engine, trans (Sawyer-Bailey), in gun, 155-mm, SP, T97; howitzer, 8-inch, SP, T108; tanks, M46, M46A1, M47, M48, T43E1, Mar 54

Ord 7-8 SNL J-120, Drill, elec, port, 110-v, 90-deg angle, Mar 54

Ord 7-8 SNL J-724, Gun, pump bucket, hand, pot-oil, Mar 54

Ord 7-8 SNL J-728, Parts cleaner, mech, solvent-type, motor-driven, Mar 54

Ord 3 SNL P-7, Fuzes, primers, etc, for AA, hvy FA, Mar 54

Ord 7 SNL Y-32, Tgt, air, OQ-19B, OQ-19D, Feb 54

Ord 7 SNL Y-34, Catapult, air tgt, rocket-powered, type A-7, Mar 54

Ord 7 SNL Y-35, Starter, ext, elec, type J-5, Mar 54

Ord 7 SNL Y-36, Cart, starter, mod RPES-3A, Mar 54

Ord 7 SNL Y-37, Test-box equip, air tgt, Mar 54

ORDNANCE MWO'S

C44-W8, Comb gun mts M34 and M34A1: Collecting empty ammunition belt links, Jan 54

C73-W4, 57-mm rifle T15E13: Changing to T15E16, Mar 54

C82-W3, 76-mm gun M32: Improve operat crank, Mar 54

D24-W25, 155-mm gun carriage M1: Reinforce trail alinement plates; Relocate, drawbar, air hose modif lunette assy, Mar 54

D28-W38, 90-mm AA gun mts M1A1, M1A2: Modify bogie engaging eye handle guide bracket, Mar 54

D28-W39, 90-mm AA gun mts M1A1, M1A2: Provide means facilitate removal hinge pin from fuze setter, seat bracket assy, Mar 54

D29-W19, 8-in how carriage M1 (same as D24-W25 above)

D33-W36, Cannon trans wagon M1A1, M3A1 install modif lunette, assy, Mar 54

D38-W24, Shell crimper assy 90-mm AA gun mounts M2, M2A1: Reinforce end, cam handle ext, Mar 54

D49-W1, 155-mm gun T80, 8-in how T89: Elim percuss func, firing lock T8, Mar 54

D57-W1, 280-mm gun T131: (Same as D49-W1 above)

F256-W3, Mount, 'scope, M42 replace holder assy, Mar 54

F312-W2, Periscope Convert M66 to M66C, Feb 54

F342-W1, AA FCS T33C, T33D, M33C, and M33D: Apply fld chgs, Mar 54

G1-W42, Tanks T41E1, T41E2, vehicles M8E2, T141, T194, T98E1: Decrease trans convert lock-up speed, Feb 54

G1-W46, Arm inf vehicle T59, trucks M135, M211, M215, M217, M220, M221, M222: Install new trans control-valve outer body, Mar 54

G251-W3, 76 tank M41: Replace hull ammo rack primer cover, Mar 54

G253-W1, SP twin 40-mm gun T141: Install hand-refuel pump, Mar 54

G260-W13, Arm inf vehicle M75 (T18E1): Install fuel tank supports, Mar 54

G262-W13, Tank M47: Install lock wash, turret manual traverse differential, Mar 54

G268-W1, 4x4 hvy gun-lift front truck M249, rear truck M250: Adding neut stop, shift control bracket, Mar 54

TB'S

Ord 555, Rifles 75-mm M20, 105-mm M27, 106-mm M40 (T170E1): Proced determ round life, Mar 54

Ord 556, 'Scope Mounts M18A1, M75, M21A1, M25 on FA weapons: Fld tests, adjust, Feb 54

Ord 557, Cleaning storage batteries, Mar 54

9-314-2, Rifles 57-mm T15E13, M18, M18A1; 75-mm T21 and M20 (T25): Differ between 'scopes M86C, M86F, sighting with M86F, Feb 54

9-718A-12, Tank M47: Hookup, new type (GE) mast junct box, Mar 54

9-755B-1, Arm inf vehicle M75 (T18E1): Stake sprock mount bolts, Mar 54

9-871A-2, Cargo trailer M100: Stowage box maint, Mar 54

9-2855-19, Power plant heater kit, 5-ton, 6x6 trucks M41, M54, M55, M51, Mar 54

9-2855-29, Power plant heater kit, tanks M46A1, M47, Mar 54

9-6092-1, AA FCS T33C, T33D, M33C, M33D: Dust seal, acq ant drive, extreme cold, Mar 54

9-7205-2-1, Elevate, traverse comp for SP 105-mm how T98E1, Mar 54

TECHNICAL MANUALS

9-6053, Elevation quadrant M13 (T21), Mar 54

9-6087, Local contr sys M16A1, Jan 54

9-6101, 'Scope mts M23, M28, M31, M32, M42, M46, M52C, M52D, M54, M71, Feb 54

9-7013-1, Turret assy, turret race assy, commander's cupola assy, turret ventilat blower, universal joint assy, final drive, steer, shift control assy, for T48 tank, Mar 54

9-7205-2, Elevate, traverse sys, SP 155-mm how T194, 155-mm gun T97, 105-mm how T98E1, 8-inch how T108, Feb 54

9-8029-3, Crane, power train, M62 wrecker, Feb 54

9-9015-3, ¼-in cap hvy-duty, 115-vt port drill (US Elec Tool Mod 14HDS), Mar 54

FIRING TABLES SEPT 53

FT 75AA-BC-0, Provis FT for gun, 75-mm, T83E1, shell, HE, T50E2

FT 75-BK-0, Provis FT for gun, 75-mm, T83E1, shell, HE, T50E2

ABRIDGED FIRING TABLES OCT 53

FT 81-AD-1, Mortar, 81-mm, M29 and M1 on mts M23A2, M23A1, M23, M4, M1, firing shell, WP, M57A1 and M57A1B1 w/fuze, PD, M52A2, fin, M4A1, cart, ignition, M6, primer, percussion, M34, increment, propellent, M2A1

FT 81-AE-1, *FS, M57A1 and M57A1B1 w/fuze, TSQ, M77

FT 81-AF-1, *FS, M57A1 and M57A1B1 w/fuze, PD, M52A2

FT 81-C-4, *HE, M56A1, M56A1B1, M56A1B2, M56A1B3, w/fuze, PD, M52A2, fuze, PD, M52A2B1

FT 81-N-1, *WP, M57A1, M57A1B1, w/fuze, TSQ, M77

2FT 81-S-2, *HE, M56A1, M56A1B1, M56A1B2, M56A1B3, w/fuze, TSQ, M77

FT 81-T-2, *HE, M56A1, M56A1B1, M56A1B2, M56A1B3, w/fuze, PD, M53A1

*Same subject as FT 81-AD-1 except firing shell listed.

MISCELLANEOUS

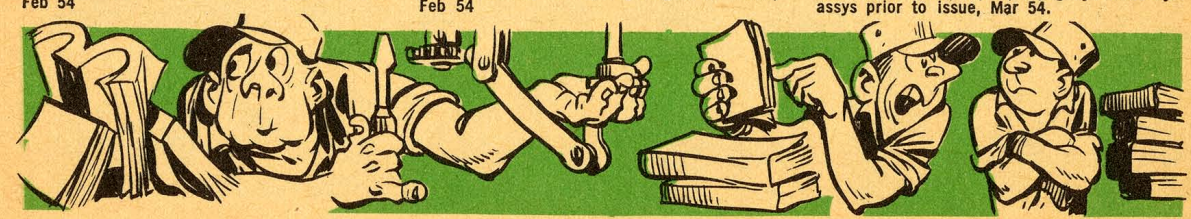
LO 9-7010, Tank, M47, Feb 54

LO 9-7016, Tank, M41 (T41E1), T41E2, Feb 54

LO 9-7204, Howitzer, 105-mm, SP, T98E1, Feb 54

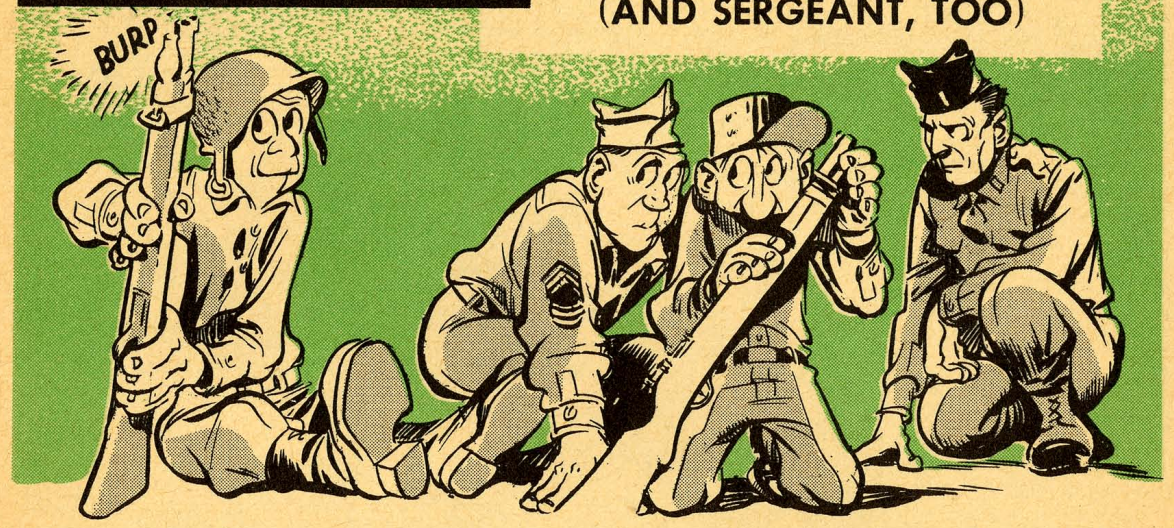
LO 9-7604, Carrier, cargo, amphib, M76 (T46 E1), Feb 54

SB 9-81, Inspect, repair, repkg hyd-brake cyl assys prior to issue, Mar 54.



ARMAMENT

MR. LIEUTENANT, SIR . . . (AND SERGEANT, TOO)



LET'S CLEAN UP THOSE GAS CYLINDERS

Check that rifle, buddy. She may be loaded, but not for bear. Somebody's doing the old M1 dirt, and it just ain't right. The same goes for the M1 and M2 carbines, too.

Seems as how a mighty important piece of cleaning is being overlooked, so bend an ear. The trouble spot is the gas cylinder on that trusty piece of yours, which isn't so trusty with the gas cylinder fouled up like Hogan's goat.

Heavy carbon deposits, built up by continuous firing such as range work, gang up in that cylinder. Exposure to rain, snow, or blowing dust likewise gums the works.

Now—for the joker in the deck. You foot-poundin' rifle-toters are strictly ordered **not** to touch that gas cylinder, without somebody like old Sgt Half-Mast lookin' on. The book says it takes qualified supervision—so here, Mr. Lieutenant, sir, (or Sarge) is where you come in.

A change coming up for FM 23-5 will give you the official dope.

Ordnance says that loads of rifles these days are being rejected as a result of poor care of the gas cylinder. Such cleaning can be done only under supervision of an officer, qualified non-com or Ordnance personnel. How, then, to make it easy on all concerned and yet get it done?

Try this—get the squad, or platoon, or even the company together for a rifle rubdown—complete with the required supervision.

Remember—the soldier can't do it without that expert eye—and his rifle will foul if it isn't cleaned.

Think it isn't needed? One outfit alone reported 30 M1's out of 250 declared unserviceable at one time—all because of uncleaned gas cylinders.

If you will, Mr. Lieutenant, or Sergeant, sir, so we can do it by the numbers.

IS FORM 478 NEEDED?

Dear Half-Mast,

Just received an MWO for the telescope used on 105-mm howitzers. Here's my tale of woe—the MWO says that necessary entries are to be made on Form 478 when the modification is completed.

Was there a snafu on this deal, and the information is to be entered in the Gun Book instead of 478? I don't think that Form 478 is required with such things as telescopes and sights. What's the pitch?

CWO H. I. G.

Dear Mr. H. I. G.,

You're correct about Form 478. Fire control items, such as sighting equipment, do not require recording in Form 478. Form 478 is for recording modifications of major unit assembly replacements on vehicles. The Weapon Record Book DA 9-13 replaces Artillery Gun Book 00 No. 5825 (which may still be used) and will be used to record modifications to fire control items which have been issued with the weapon. Stock items of fire-control do not require recording in the Weapon Record Book.

Half-Mast

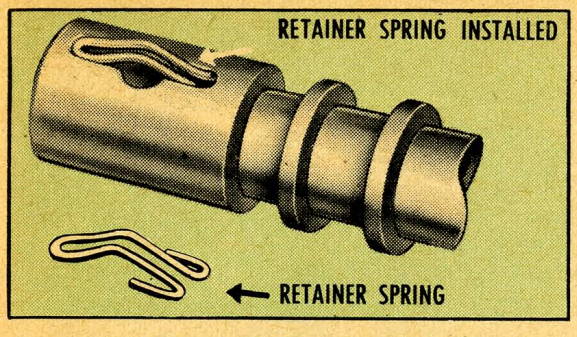
M7A3 GRENADE-LAUNCHER SPRING

Dear Half-Mast,

Somehow while giving instructions on the M7A3 rifle-grenade-launcher, we lost the retainer spring. We'd like to replace it but we can't find its stock number in our SNL.

Could you give us the stock number of that new-type retainer spring?

Sgt R. W.



Dear Sgt R. W.,

Sure can . . it's Ord Stock No. B 039-7266162, and it's in the Ord 8 SNL B-39. But your Ordnance support unit can let you have 'em to do this easy job.

You see, the stock number is not going to be listed in the new Ord 7, but you'll be able to find it in the new Ord 8.

We have had a lot of praise for this new type spring—it's a humdinger.

Half-Mast

RECOILLESS SAFETY LEVER

Dear Half-Mast,

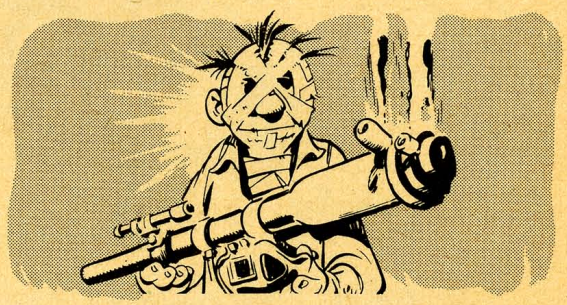
We've been having trouble with the safety levers breaking on the 57-mm, recoilless rifle, M18A1

Can you give us some advice on this problem?

Cpl M. H.

Dear Cpl M. H.,

Failure of the safety levers on the M18A1 57-mm recoilless rifle has been reported to the Chief of Ordnance, and the specialists are coming up with a fix to take care of your problem.



There's not much you can do right at the moment for that safety lever. You'll get the new dope through an MWO, a maintenance service letter or PS Magazine.

When your rifle's safety-lever quits on you, fill out an Unsatisfactory Equipment Report (Form 468) and mail it to the Chief of Ordnance, Washington 25, D.C.

Half-Mast

SHORT STOP TURN-IN

The opening at the point where the bullet nose comes to rest in the short-round stop for your .30 cal. machine gun could be undersized. If it is, the lower tip of the stop'll dig into the bullet nose and the tip'll break off.

You don't want a short stop that'll foul up your piece, so take heed and have it checked.

Get all of your short-round stops (Ord Stock No. A006-7162248) and have your Ordnance maintenance gage that opening to see if it's .308 plus .002 inch in diameter. They'll do this by sticking a piece of steel .308 inch in diameter in the stop opening where the bullet nose comes to rest.

If the "gage" won't go in the hole, turn the stop in for one that the "gage" will go in. The turn-in will go back to the arsenal for reworking.

SAME OIL, TWO NAMES

Dear Sgt Dozer,

What's the score on transmission oil for the D-8 Caterpillar? The manufacturer's manual says to use a straight mineral oil that won't channel, and recommends SAE 90, SAE 80, or SAE 140, depending on the temperature. LO 5-3040-B (4 Dec 53) says GO 90, 75, or GOS according to the temperature.

When we first got the D-8, its transmission oil neither looked nor smelled like hypoid oil. It was more like heavy motor oil. So—what gives?

We've used GO 90 like the LO says, but we'll be uneasy until someone interprets these instructions for us, so please answer real soon, if you can.

Cpl L. M. P.
Cpl C. B. K.

Dear Cpl L. M. P. and Cpl C. B. K.,

The Army's GO 90 is the equivalent of the manufacturer's SAE 90, so you're OK following the D-8's latest LO to the letter.

Bull Dozer

IDLE TALK?

Dear Sgt Dozer,

My pet gripe against heavy equipment instructors is the needless idling they put the equipment through. It goes on for hours at a time when power's not necessary. Makes me cringe to think of the wasted fuel, the overheating, possible warping, and the carboned-up exhaust valves.

Guess some instructors think and talk better with an engine idling in the background, but I can't go along with the practice—I'm the guy responsible for the maintenance.

Cpl D. W. S.

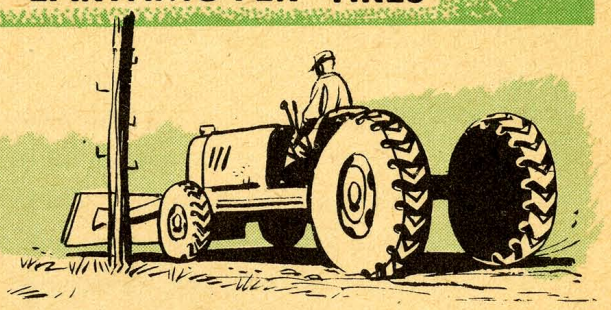
Dear Cpl D. W. S.,

Let's you and me lower the boom on such bums if they don't wise up.

Bull Dozer

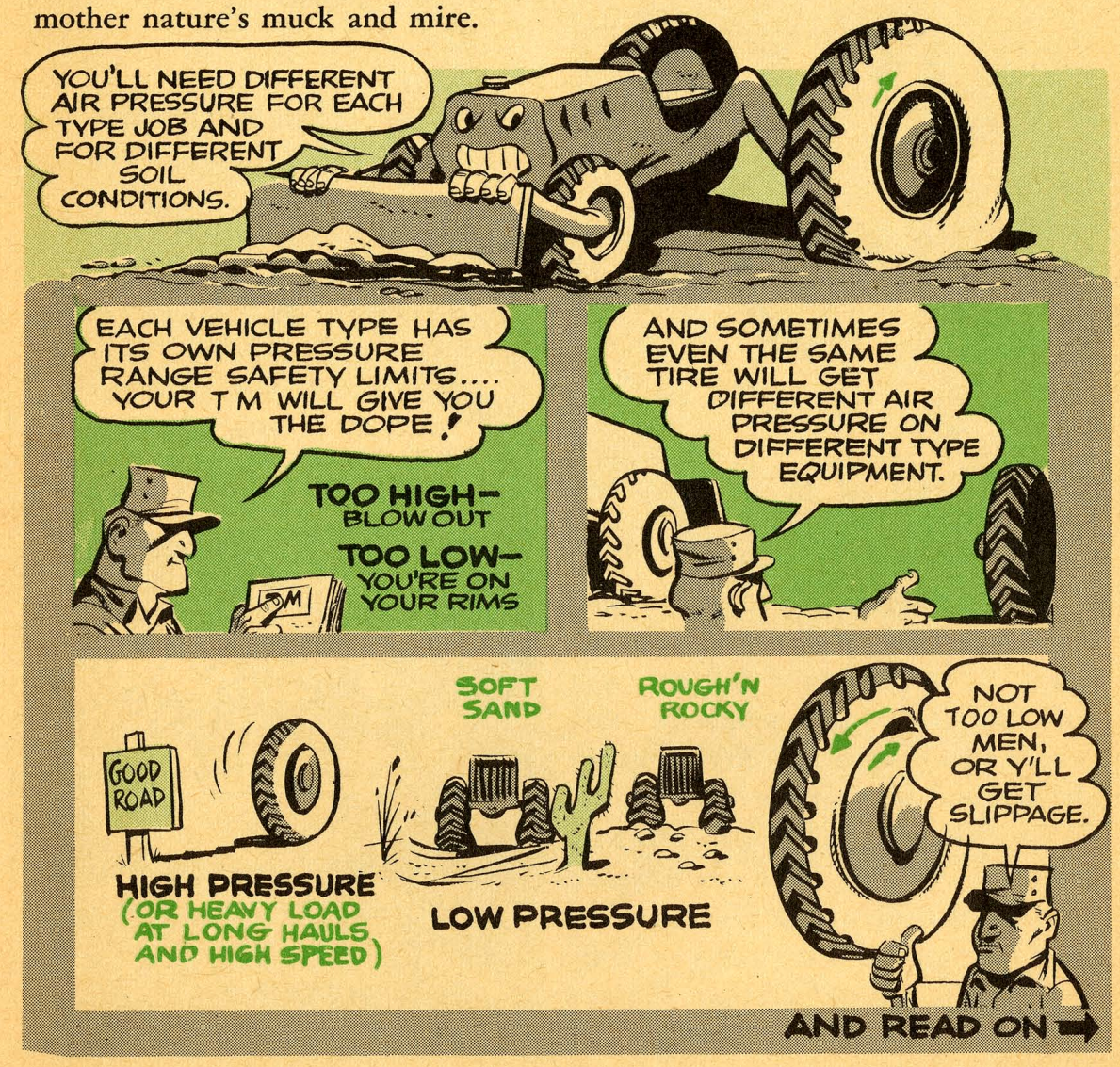
SOME DIRT ON EARTHMOVER TIRES

On soft earth, there's nothing like a tractor to slide over the rough spots. But when it comes to double duty—hittin' the dirt and swinging down a paved highway—it takes muscle machines on rubber doughnuts.



Air Pressure

Although Tournapulls, scrapers and that kind of earthmoving equipment have tires instead of tracks, lots of traction is still a must for work in mother nature's muck and mire.



The Arrow Points

Another thing that could make or break your tire's traction is the way it's installed on the rim. Most traction tires have a lug or bar-type tread with the lugs sticking out at an angle from either side toward the center. These treads will give you good traction only if the tire turns in the right direction.

That's why there's an arrow on its sidewall (Fig 1). Mount the tire so's it turns in the direction the arrow points.

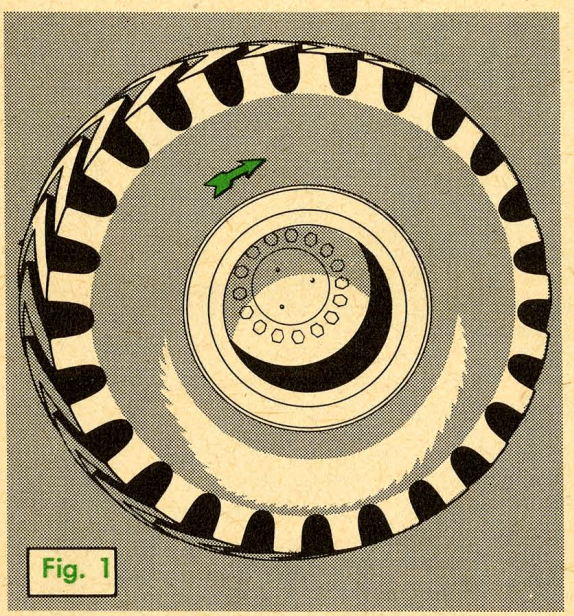


Fig. 1

With the lugs mounted in the right angle, any mud or dirt that snags between the tread should fall out as it rolls. But if the arrow points the other way, mud will tend to build up between the lugs and cut your traction.

The only time your tire's arrow may point the other way is if it's mounted on a non-driving wheel. There it needs little traction and'll have lots of flotation—taking a load off your engine's back.

THIS PANE

The job of carving a smaller, usable part out of a bigger, broken piece of safety shatterproof-glass needn't be as much of a pain as some men make it.

This kind of window is made of two panes of glass, glued together with a sheet of transparent cement. If the glass cracks or splinters, this cement holds the shattered pieces tight and keeps them from flying.

To cut the glass, lay it on a flat, smooth surface, and put a straight ruler along the path you want to slice. With an ordinary glass cutter, Engineer Stock No. 41-2518.700.500 (Ordnance people use Stock No. 41-C-2965), plow a deep, sharp path down the ruler edge's entire length.

Then, turn the glass over—easy-does-it. Put your ruler's edge over the same path you cut before—which you can see through the glass. And, plow another

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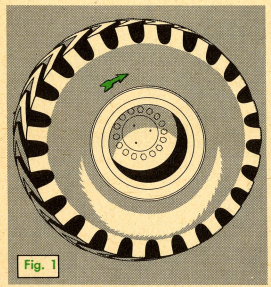

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THIS PANE WON'T HURT

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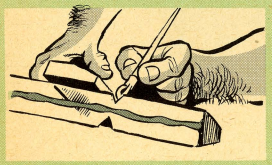
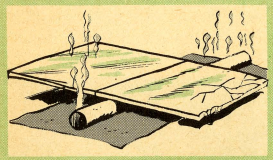
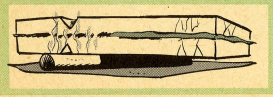
Then, turn the glass over—easy-does-it. Put your ruler's edge over the same path you cut before—which you can see through the glass. And, plow another deep and sharp cut where you want it. With this, you've scratched your mark on both sheets that make up the safety glass.



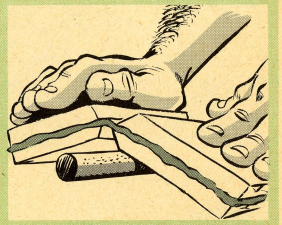
Next, take a 3/16″ welding rod that's longer than the cut, heat it with an acetylene torch, and lay it on a piece of fireproof material. Lightly, place the glass on the rod so that it's about 1/8″ from the cut and under that part of the glass you won't want.



The rod's heat will soften the cement layer between the glass. And, it'll provide a small wedge on which to make the split.

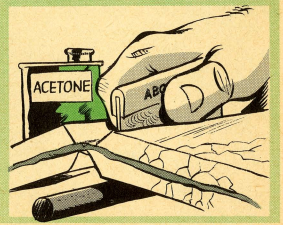


After the rod heats the glass along the cut's entire length, put enough hand pressure on the part you want least. Crack the cut, and lay open the center binding.



If you've some acetone, Engineer Stock No. 51-1112.700.300 (Ordnance Stock No. 51-A-227) around, pour a little down the opening. It'll make the binding easier to slice. But with or without the acetone, take a razor blade and cut through the cement to end the surgery.

With a little practice, you'll find you can carve curved edges, as well as straight ones, the same way—and still be safe.



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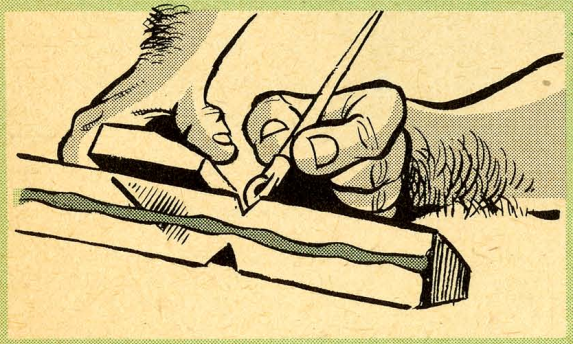

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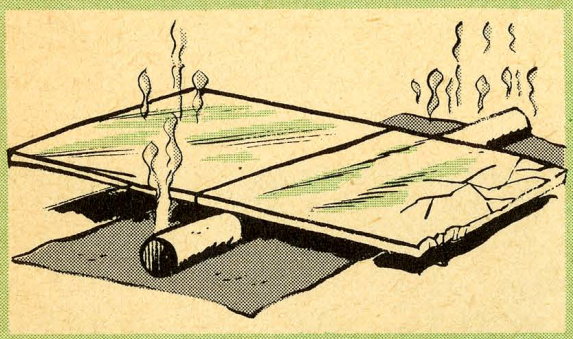

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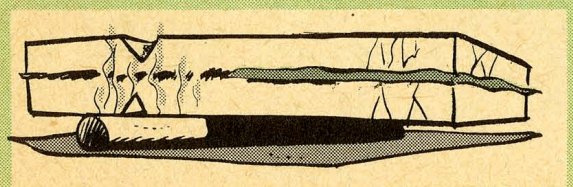

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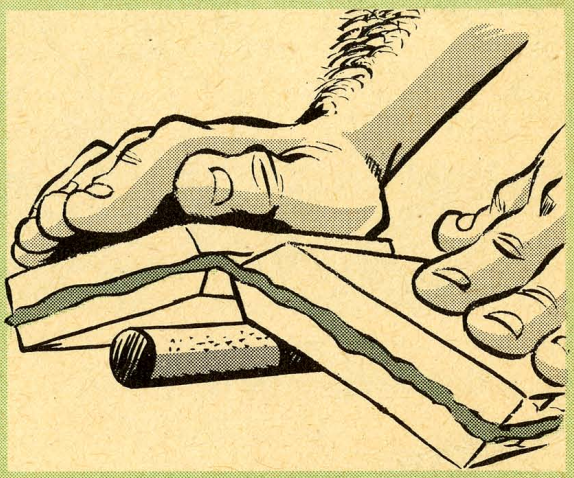

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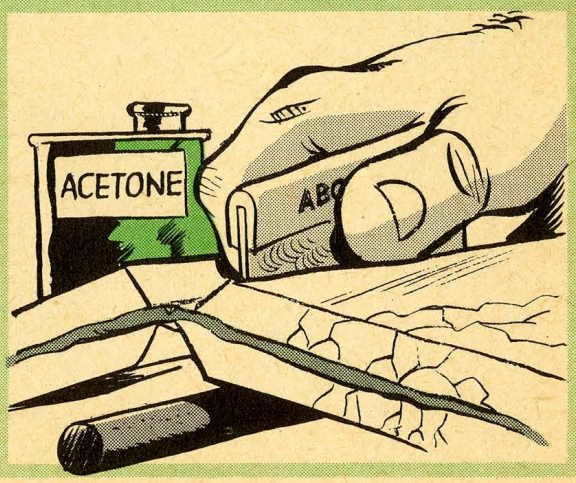
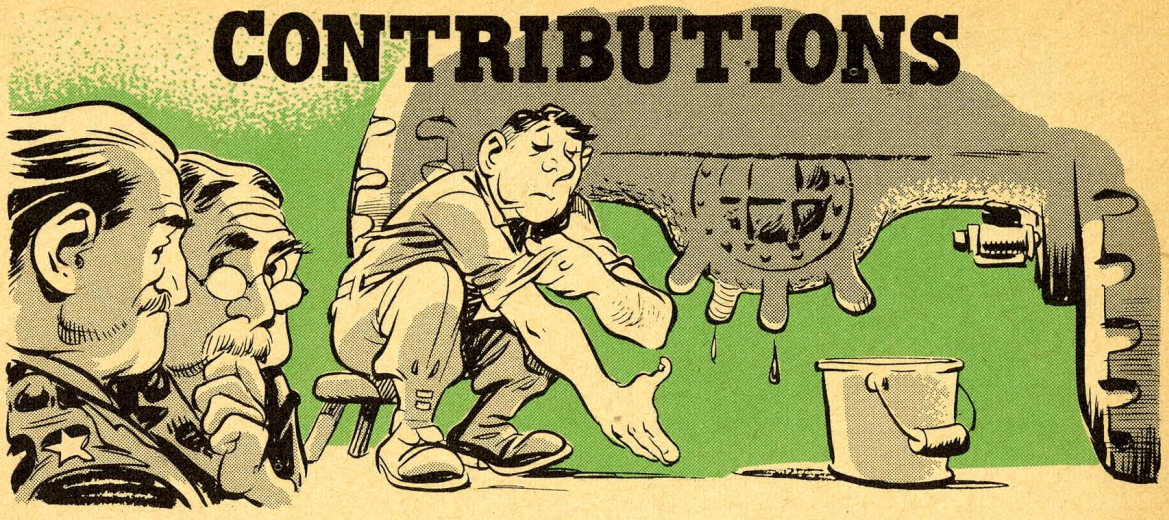


CONTRIBUTIONS



M62 CLUTCH ADJUSTMENT

Dear Editor,

Here's an additional clutch adjustment needed on the M62 wrecker, and you won't find it in TM 9-837 or the manufacturer's manual.

Soon's we made the adjustment, a lot of our clutch troubles flew out the window.

First we got the clutch pedal free-play adjusted on the left side of the flywheel bell-housing (Fig 1). Then we went to the right side of the bell-housing and did a little job that's mighty important to the life of the clutch.

There you'll find an air declutching-cylinder. On the linkage going from the air-cylinder to the clutch-release shaft, you'll see a bolt that is threaded thru the linkage and held by a lock nut (Fig 2). This bolt properly adjusted will help to keep down clutch trouble.

You loosen the lock nut and back off on the bolt until there's about 1/8" clearance between the head of the bolt and the air-clutch release lever.

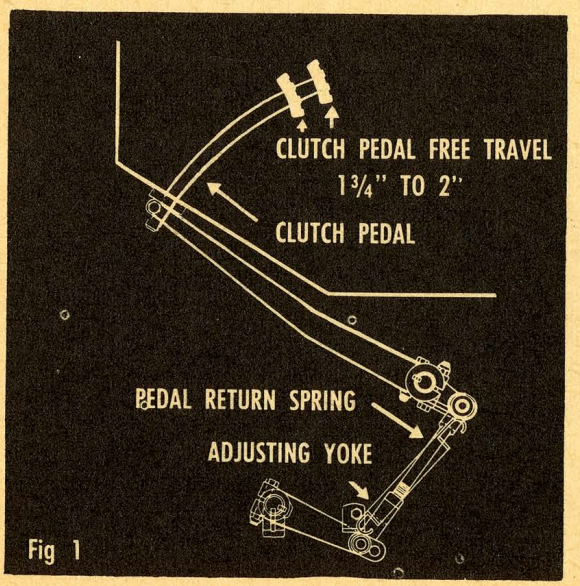


Fig 1

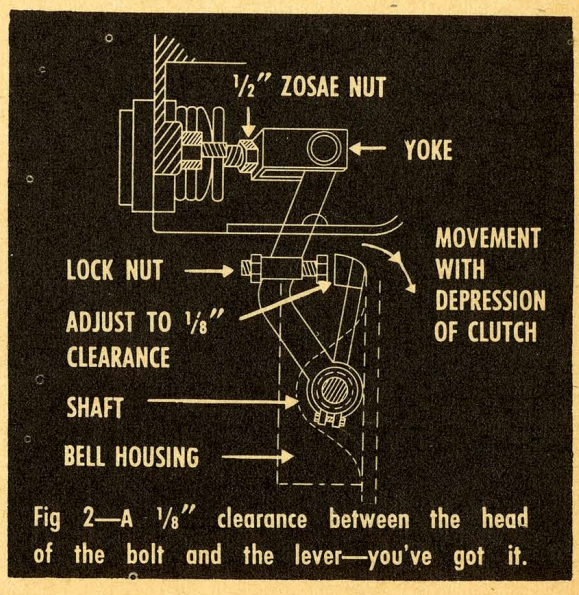


Fig 2—A 1/8" clearance between the head of the bolt and the lever—you've got it.

If the head of that bolt's right up against ('specially if you don't know how far up against) that lever, it'll give you clutch trouble. It's just the same as riding the clutch up in the cab and keeping it partially engaged.

SFC H. C. Lewis
Camp Rucker, Alabama

(Ed Note—There's not many fellas that know about that bolt adjustment. You're really on the ball. Ran into some guys who knew there was an adjustment somewhere on the right side of the bell-housing but they were hitting the wrong spot. They were turning the yoke on the air-cylinder shaft in and out to do the job. All they were doing here was changing the stroke of the air-cylinder piston which might throw everything out of whack. Adjust the bolt and leave the yoke alone's the word. By the way, that clutch pedal free-play's been upped to 1¾ to 2 inches with the adjustment on the high side of the two inches. A TB will include this new dope, and the TM is being revised.)

SAFETY SPRING, OIL-DRAIN VALVE

Dear Editor,

We have rigged a safety spring to the oil-drain valves on Wisconsin auxiliary generators in our M46 and M47 tanks.

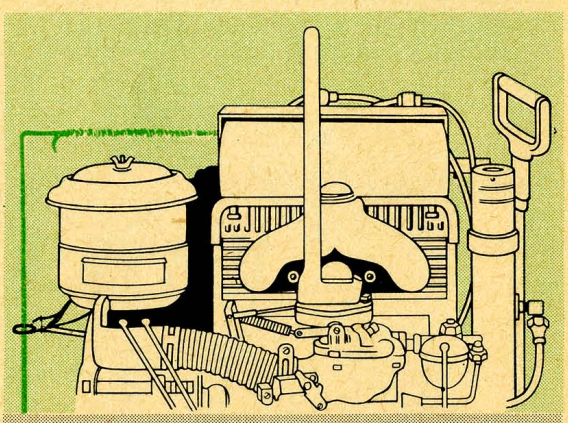
This spring prevents the valve from vibrating open or from being opened by accident. It also shows new crews at a glance that the valve must be in the "OFF" position except when actually draining the oil.

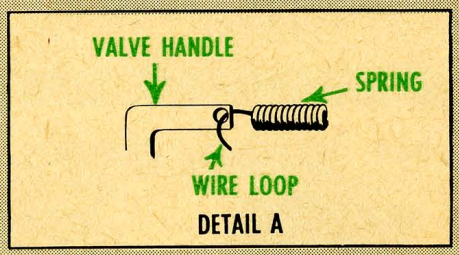
These springs are easy to make. A standard screen door spring (got a friend in QM?) makes three springs. They are wired to a hole in the end of the valve handle and cotter-keyed to the engine cooling shroud (Fig 3).

84th Tank Bn.
Ft Knox, Kentucky

(Ed Note—Good idea, and if your tanks have the older Li'l Joe on which the oil drain valve data plate says OFF and ON instead of the new one showing the DRAIN position, why not paint "Drain" at the ON position and "Run" at the OFF position?)

WISCONSIN AUXILIARY GENERATOR





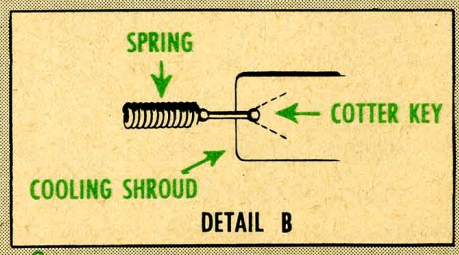


Fig. 3

LOCK-PIN CHAINS

Dear Editor,

In many cases on the 1½-ton cargo, M104, and on the M106, trailers, we find that the chain holding the lock-pin to the landing-wheel bracket is not long enough to let us move the pin from the position of "landing wheel down" to the position "landing wheel up."

To correct this, we cut the chain loose from the welded spot on the bracket and attach it to the right lifting-handle on the tongue with a wire loop big enough to slide back and forth along the handle. A coat hanger of soft wire will do the job. But we have found that a hand-grenade safety-pin pull ring makes the set-up perfect (Fig 4).

The diagram with the letter may help explain the situation.

PFC Lloyd M. Cox
Camp Rucker, Alabama

(Ed Note—Your idea of linking the lock-pin chain around the handle looks good as a quick fix, but better yet—have Ordnance replace the chain when a link breaks.)

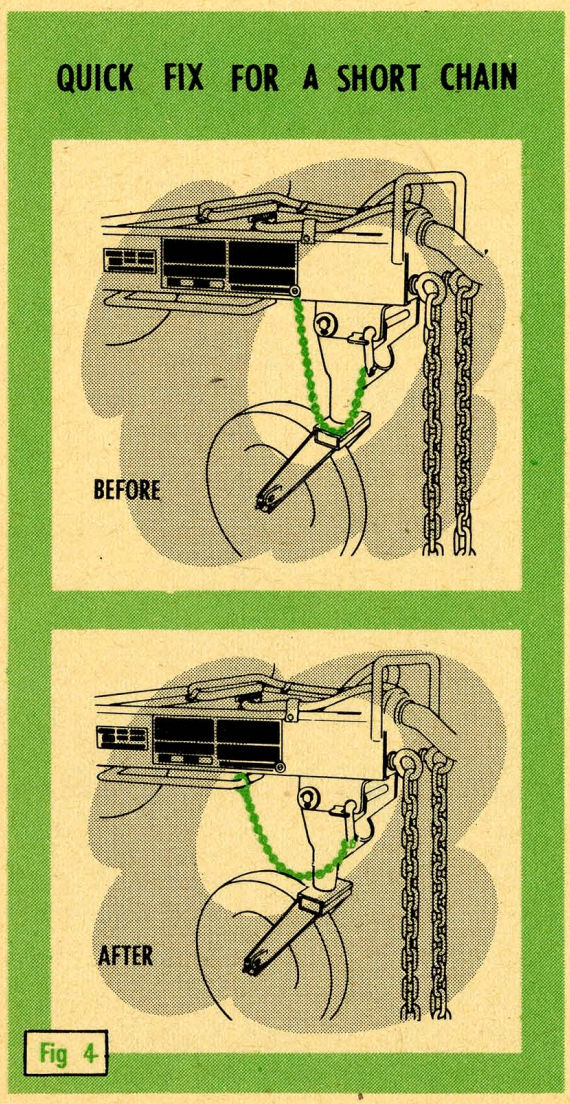


Fig 4

NO MORE TM TROTTING

Dear Editor,

To get help from a manual, our mechanics have had to stop the job and go find one. This got to be a nuisance.

We solved the problem by piercing the TM with a strong wire and making a hook in the end of the wire. Now we can hang it wherever we're working. It is a great time-saver (Fig 5).

Sgt Arland Rogers
Ft Bliss, Texas

(Ed Note—Good trick if you have enough TM's to go around.)

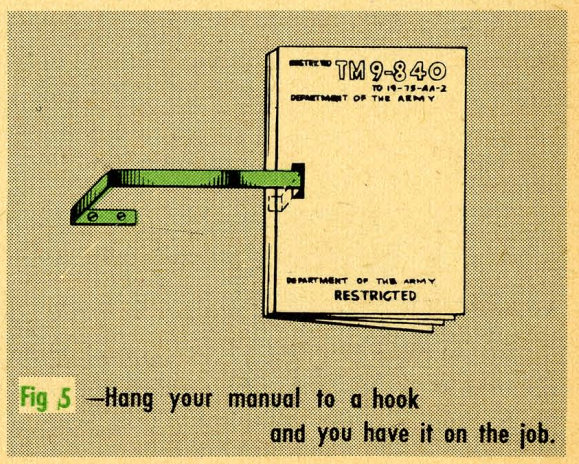


Fig 5 —Hang your manual to a hook and you have it on the job.

Connie Rodd's BRIEFS

Stripped nuts

The piston nut in your .30-cal. carbine gas-cylinder group is staked to keep it tight. If you try to take it out, you'll not only burr the threads but you'll twist the turning lugs on the nut. If that nut's got to be taken out for cleaning, let your Ordnance support unit do the job for you.

No battery cell-voltage

You can't get separate cell-voltage readings on the new waterproof batteries 'cause they're sealed. So, when you're jotting down the battery voltage on DA Forms 461 and 462, put down the reading for each battery instead of each cell. And if you see anyone digging into a battery to get cell readings—bust their knuckles. You only take individual cell readings on batteries that have exposed cell straps.

Contrast

Almost cracked an eyeball trying to spot the timing mark on the M38A1's pulley. That suggestion to paint it white for easier look-see is still good.

Leave it alone

That hard black finish you see on the gear surfaces of your Skysweeper is an oxide film which retards rust and corrosion. Shame on you, if you're thinking of taking it off.

Skysweeper breech interlock

There's good news for you if you've been having trouble with the breech interlock on your Skysweeper. A new one-piece interlock is on its way into the supply system. It'll carry Stock No. D48-7307900. For an immediate fix, better see Ordnance support.

Connie flipped one

Looks like I don't know my left from a hole in the ground. **There's the Rub,** on page 760 of PS #16, should have said, add weld to the M38's **left** front wheel-stop and its right wheel won't rub against the frame, when making those sharp left turns on bumpy roads. Also, better make a note about it in your TB 9-804-12 which is being changed, too.

Don't just sit there...

THERE'S A WHOLE CROWD OF GUYS WHO'D LIKE TO KNOW YOUR BETTER WAY OF DOING IT.. IF YOU'VE GOT A NEW IDEA..A BETTER GADGET, A SHORT CUT, OR A NASTY COMMENT.. DON'T TRY TO WIN A LITERARY PRIZE... JUST WRITE IT DOWN AND...

Mail it to...

SGT HALF-MAST ▸ PS MAGAZINE, ABERDEEN PROVING GROUND, MD.